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EDISON ELECTRIC INSTITUTE BULLETIN

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UBLISHED MONTHLY BY EDISON ELECTRIC INSTITUTE

ELECTRICAL RESEARCH STATISTICS
THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

June, 1948-1949

SOURCE AND DISPOSAL OF ENERGY—MONTH OF JUNE

	1949	1948	%
GENERATION* (Net)			
By Fuel Burning Plants	16,393,118,000	15,776,804,000	+ 3.9
By Water Power Plants	7,224,306,000	6,936,115,000	+ 4.2
Total Generation	**23,617,424,000**	**22,712,919,000**	**+ 4.0**
Add—Net Imports Over International Boundaries	100,051,000	154,200,000	−35.1
Less—Company Use	118,790,000	115,995,000	+ 2.4
Less—Energy Used by Producer	429,959,000	489,282,000	−12.1
Net Energy for Distribution	**23,168,726,000**	**22,261,842,000**	**+ 4.1**
Losses and Unaccounted for	3,264,625,000	2,964,714,000	+10.1
Sales to Ultimate Customers	**19,904,101,000**	**19,297,128,000**	**+ 3.1**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of June 30th			
Residential or Domestic	34,474,019	32,539,763	+ 5.9
Rural (Distinct Rural Rates)	1,734,588	1,619,188	+ 7.1
Commercial or Industrial:			
Small Light and Power	5,212,686	5,059,652	+ 3.0
Large Light and Power	228,355	198,431	+15.1
Other Customers	144,303	138,179	+ 4.4
Total Ultimate Customers	**41,793,951**	**39,555,213**	**+ 5.7**
KILOWATTHOUR SALES—During Month of June			
Residential or Domestic	4,375,197,000	3,815,387,000	+14.7
Rural (Distinct Rural Rates)	663,854,000	509,598,000	+30.3
Commercial or Industrial:			
Small Light and Power	3,758,545,000	3,482,457,000	+ 7.9
Large Light and Power	9,887,704,000	10,260,641,000	− 3.6
Street and Highway Lighting	178,077,000	163,537,000	+ 8.9
Other Public Authorities	522,057,000	498,768,000	+ 4.7
Railways and Railroads:			
Street and Interurban Railways	284,960,000	309,817,000	− 8.0
Electrified Steam Railroads	188,013,000	203,759,000	− 7.7
Interdepartmental	45,694,000	53,164,000	−14.1
Total to Ultimate Customers	**19,904,101,000**	**19,297,128,000**	**+ 3.1**
Revenue from Ultimate Customers	**$371,446,400**	**$345,022,800**	**+ 7.7**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended June 30th			
Kilowatthours per Customer	1,625	1,505	+ 8.0
Average Annual Bill	$48.43	$45.60	+ 6.2
Revenue per Kilowatthour	2.98¢	3.03¢	− 1.7

(*) By Courtesy of the Federal Power Commission.

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DISON ELECTRIC INSTITUTE BULLETIN

olume 17 SEPTEMBER, 1949 No. 9

The Role of Electric Companies in River Valley Developments

By Edwin Vennard

Vice President, Middle West Service Company, Chicago

An address presented before the Fifth Annual Forum of Agriculture, Industry and Labor, University of Wyoming, Laramie, Wyo., August 15-17, 1949

RACTICALLY everyone is in favor of sound river development. The electric companies are in fa of it.

The purpose here is to discuss not the irability but the methods that are t for the public welfare. My discus- n will be limited to the questions ting to electric power in these river elopment programs, and the part that tric companies can play in the public rest.

There are more than 400 separate tric light and power companies in s country. Whenever practical, these npanies have interconnected their nsmission lines with one another, thus rming a network covering most of e country. I cannot speak for all of se companies. However, I am gen- lly familiar with the policies of many them respecting river development, d I shall endeavor to interpret some these policies.

It will be my purpose to point out w this highly developed electric light d power business can be coordinated th the government river development ogram in a way that results in the eatest benefit to the public. The prin- al question before us is: *How should electric power generated at govern- nt dams be handled?*

(a) Should it be coordinated with the existing systems of the electric companies in the area, and, if so, how should coordination take place in the public interest? or

(b) Should the government power be distributed over government transmission and distribution facilities for direct sale to consumers?

This problem in turn poses the question as to whether the electric light and power business should be continued as a business under government regulation or should it be taken over by the government? This problem also raises broad questions relating to socialization of industry and the effect of such socialization upon individual freedoms.

I shall endeavor to treat the subject in this broad sense.

I believe the American people and the Congress want the rivers developed and natural resources conserved in keeping with the following principles:

1. There should be the maximum in public benefits with a minimum expenditure of public funds.
2. All of the benefits resulting from river development, including any and all savings resulting from the generation of government power, should be passed on to the consuming public.
3. America should not be transformed into a Socialist state.

I shall discuss river development and the role of the electric companies respecting these principles under the following headings:

I—Electric Companies' Position.

II—How Electric Companies' Position is in Keeping with the above Principles.

III—Government Power and Encroaching Socialism.

IV—Public Opinion.

V—Recommended Solution in the Public Interest.

ELECTRIC COMPANIES' POSITION

IN August, 1945, 167 electric light and power companies published a statement of their position respecting river development and the disposition of the hydroelectric power. This statement appeared in a number of national magazines and in many newspapers. These were the companies coordinating their efforts on a national level to inform the American people about the power business. This does not mean that the other electric companies not participating in that program have not a similar position.

These 167 electric companies said:

"1. When a dam is proposed, all of its purposes should be clearly defined in the legislation — flood control, navigation, irrigation or power. And just as clearly, the benefit to the people affected should justify the cost.

"2. If power is produced at government-built dams, it should be sold to existing power systems, without special privilege or discrimination. This will save expensive duplication of transmission facilities, help coordinate the entire

power supply of each region, and assure the widest possible use at the lowest practical rates.

"3. Any savings made possible by this plan should be passed along to the users of electricity under regulation by State Commissions or other properly constituted regulatory bodies. This will assure all the benefits of river development and hydro-power without the added expense of government going into business and competing with its own citizens.

"4. Government in *any* business endangers *all* business. Government in business escapes many normal business obligations, enjoys free mail, pays no federal taxes, and few, if any, other taxes, little or no interest. If government can sell electricity on this basis, it can sell shoes, groceries, automobiles, or anything else in the same way. Government may properly *regulate* business in the public interest but should not *operate* business. It should not play in the game for which it makes the rules. In other words, *government should not try to be umpire and pitcher at the same time!*"

Since then, a number of companies have announced more specific positions as they apply to particular areas.

Rural Electrification

It seems appropriate at this time to state the position of many electric companies concerning rural electrification. This is desirable for the reason that, first, rural electric cooperatives are closely associated with some of the governmental agencies engaged in river development, and, second, various acts of Congress require preferences to cooperatives.

1. Electric companies are strongly in favor of rural electrification.
2. Because of the thinness of rural areas and the resultant economic difficulties in extending rural lines and because rural electrification benefits the whole community—electric companies generally are in favor of the special low interest rates the federal government allows the cooperatives for extensions to farm customers.
3. The electric companies believe in assisting the cooperatives by making wholesale rates to the cooperatives as low as practical. In many cases there are especially low ones.
4. Where the wholesale rates offered by companies are reasonable and the power supply is adequate, the companies are opposed to the cooperatives building transmission lines and generating plants with government funds.

Here are a few interesting facts on rural electrification.

1. The electric companies began rural electrification during the 20's. It was slow, primarily for the reason that electric companies were building the interconnected transmission line systems between communities during that period. This step was a necessary one before rural electrification could be accomplished on a large scale.
2. During the depression the whole program was necessarily curtailed.
3. Today, the percent rural electrification is as follows:
   a. *Rural Dwellings*—The U. S. census includes among rural dwellings the dwellings in communities of 2500 population and under.

      On this basis, the rural dwellings are 91 per cent electrified, or have electricity within reach. Of these—78 per cent are served by electric companies; 16½ per cent are served by rural electric cooperatives; and 5½ per cent are served by municipal plants and the like.

   b. *Farm Dwellings*—On this basi 88 per cent have electricit within reach, and 82 per cen are electrified.

      Of these: 50 per cent are serve by electric companies; 45 pe cent are served by rural electri cooperatives; and 5 per cent ar served by municipal plants an the like.
4. Fifty-six per cent of the electricit used by rural electric cooperative is purchased from electric compa nies.

   Sixty-one per cent of the cooper tives purchase their electricity fro electric companies.
5. Following are the average whole sale prices paid by rural electri cooperatives for electrity from va rious sources:
   a. Average wholesale price pai by cooperatives to electric com panies, 9½ mills per kilowat hour.
   b. Average wholesale price pai by cooperatives to federal go ernmental bodies, 5.1 mills p kilowatthour. (Governmer subsidies will be discusse later.)
   c. Average wholesale price paid b cooperatives to state and loc authorities, 8.9 mills per kil watthour.
   d. Average wholesale price paid b cooperatives to generating an transmitting cooperatives, 1.36 (13.6 mills) per kilowatthour.

HOW ELECTRIC COMPANIES' POSITION IS IN KEEPING WITH THE PRINCIPLE OF MAXIMUM PUBLIC BENEFIT AND RESISTANCE TO SOCIALISM

NOW, let us examine the policies and offers of cooperation of the electric companies to see if they are in keeping with the principles mentioned in the introduction.

Maximum Benefits at Minimum Cost

Since the control of water is the primary purpose of the government projects, the electric power will not always be available in the same amounts each hour of the day or each day of the year. That is, the power will not be all constant or "firm power." Some will be intermittent, or surplus power, or power that cannot be counted upon at all times.

Electric companies serving the area are in a position to make the maximum utilization of so-called "peaking power" which is power that is available on a firm basis only a few hours of the day. This power can be used to carry the peaks of the companies. The power is worth more on this basis than it is worth if the limited power were sold around the clock—which is the way it must be made available to fit the needs of ordinary customers.

In the case of flood control dams, the Army Engineers in cooperation with the Federal Power Commission take this factor into account when they design the dams in the first place. They are designed and built so that the peaking

power will fit the peak loads of the existing companies. On this basis the Army Engineers arrive at certain benefits which can be stated as dollars of income to the government. These benefits to the government are then related to the cost of building the project to determine whether the project is economically feasible. The Congress makes the authorization on the basis of this economic feasibility. In many cases, the dams are not economically feasible unless the value of the power is calculated at its value to the existing electric companies for peaking purposes.

In this way the government (*i.e.*, the American public) receives the maximum benefit so far as the capacity of the dam for power generation is concerned.

Also, the companies are in a position to purchase the surplus, or dump energy, that may be available during off-peak hours. They are able to pay a price up to the cost of making the same energy with steam.

So the sale of the power to the companies produces a larger net return to the government and to that extent relieves the public of the financial burden.

Now as to minimum cost. To the extent that electric companies already have the necessary transmission lines, or agree to build them at their expense, it is wasteful of public funds for the government to build duplicating transmission lines. Consequently, to keep the cost at a minimum to the public, the government should utilize the existing lines and systems of the companies as far as reasonably practical. The companies' policies and offers make this possible.

Pass on Savings or Benefits

The electric companies have agreed to pass on to the public any and all savings derived from the government power. Also, the government will be the regulator—to guarantee these savings to the public. When the companies agree to pass on *all* savings, no other plan can pass on more.

Resist the Encroachment of Socialism

More will be said on this subject later. Suffice it to say here, the electric light and power companies are an important part of the American economy. They were built and are being operated under free enterprise principles. They have been and are doing a good job. They served all the war and civilian needs during the war. The cost of electricity is one of the lowest cost items in the family budget. It is one of the lowest items in the cost of manufacture.

Electric service is available almost everywhere. And now these companies are expanding their plant by about $6 billion, or about 40 per cent, to take care of the future power requirements of the American people. They are doing this without government aid or subsidy. They paid $713,000,000 in taxes in 1948.

There is a great opportunity for cooperation between this industry and the government in the river development program in a way that will preserve our enterprise system. The companies have offered this cooperation.

The companies' offer is to:

—build the required lines,
—buy government power at its maximum value,
—pass all savings to the public, and
—let government determine the savings and regulate the distribution of savings.

What more is there to offer?

When, in view of this offer, the government goes directly into the power business in competition with its citizens, the principles of our enterprise system are violently broken down.

GOVERNMENT POWER AND ENCROACHING SOCIALISM

LET us examine some of the reasons advanced by those who advocate that the government should go directly into the power business.

They Say It Is Required by the Flood Control Act of 1944

The Department of the Interior interprets Section 5 of this Act as authorizing, and even as requiring, the government to go into the power business, despite the offers of the electric companies.

Let us see.

Before the passage of the Flood Control Act of 1944, there was much public discussion and Congressional committee discussion concerning the wasteful duplication of transmission lines and the need for clarifying government power policy. Section 5 of the Act was intended to clarify the policy.

The Act* refers to:

> ". . . Electric power and energy generated at reservoir projects . . ."

It refers to no other energy, such as energy generated with steam.

Then, the Secretary of the Interior is authorized to:

> ". . . transmit, and dispose of such power and energy . . ."

Here, the Secretary is authorized to transmit, but, note the reference to *such* —meaning energy generated at reservoir projects—not some other energy, as energy generated with steam.

Then, later in Section 5, there are specific limitations placed on the authorization respecting transmission facilities. These limitations were intended to clarify the government power policy.

> ". . . the Secretary of the Interior is authorized . . . to construct or acquire . . . *only* such transmission lines . . . as may be necessary . . ." (*Italics* supplied)

This would seem to clarify the question of duplicating transmission lines. If an electric company agrees to build a certain transmission line at its own expense, then it certainly is not necessary for the government to build such a line.

Now, let us consider further the question of steam plants as they relate to the power policy as clarified in Section 5. The Act states:

> ". . . the Secretary of the Interior is authorized . . . to construct . . . only such . . . facilities as may be necessary in order to make power and energy generated at said projects available . . ."

Note that the Act refers to power and energy *generated at said projects,* which are hydroelectric projects. Authorization is given to build facilities to make hydropower available—not power from some steam plant.

As to public benefits, the Secretary is authorized to transmit and dispose of such power and energy, meaning hydropower, in such manner as to—

> ". . . encourage the most widespread use thereof at the lowest possible rates to consumers consistent with sound business principles . . ."

No matter how low the price the government charges for its power, the companies agree to pass *all* savings to consumers by means of reduced rates. Can the government do more to—

> ". . . encourage the most widespread use . . ."

by going directly into the power business?

Advocates of Government Operation of the Power Business Say Government Competition is a Good Thing

It is sometimes claimed that some competition from the government is

* Section 5 of the Flood Control Act of 1944 is shown in its entirety in Appendix A, page 326

healthy. It "stimulates" business men to do a better job.

In any utility business, competition, in the sense of duplication of facilities, is wasteful and therefore contrary to public interest. In all public utilities, whether electric, gas, water, telephone or railroad, the investment in the business is quite high with respect to gross operating revenue. Duplication of facilities does not produce more revenue but merely results in an added burden on the customers. That is why regulatory bodies are appointed, first, to prevent duplication and, second, to regulate the prices of utilities.

On the other hand, the electric companies have much competition in practically all fields except lighting. There is competition with other forms of power. Also, there is competition for the customer's dollar.

Competition on Unequal Terms

When the government goes into business, the competition is not on equal terms. There are two principal subsidies that government gives itself in the electric power field:

a. It charges itself no interest, or an interest rate much lower than the market indicates people want for the use of their money in a business enterprise.

b. It charges itself no federal taxes.

If men in government and men in business could operate the electric utilities with equal efficiency as to the cost of labor, material and supplies, these two subsidies alone—the cost of money and taxes would enable the men in government to sell electricity at a price 30 per cent less than the men in business could afford to sell it. Who could stay in business against that kind of competition? Electric companies cannot. Inevitably where that competition exists, the electric companies are forced out of business. Then everyone's taxes must be raised to make up for the taxes these companies previously paid.

There is no mystery or magic about making and distributing electricity. Government does not possess any magic by which to make the electricity cheaper than the companies make it. The only reason the government sometimes sells it cheaper is because the government transfers part of the cost to the general tax-paying public—people who pay taxes to make up the losses on the sale of power below cost to customers of the government.

Advocates of Government in the Power Business Say Government Power Brings Industrial Development

It has been said that it is necessary for the government to go directly into the power business in order to make cheap electricity available to industries in order to encourage the industrial development of an area. Let us examine the soundness of this reasoning.

It cannot be said that hydroelectric power is always cheaper than steam power. As a matter of fact, at the moment most steam power is cheaper than hydroelectric power.

The government power is sold at a lower price merely because the government does not include all the costs of making power in the price at which it sells to customers. The low government power rates to industry are subsidized rates to those industries. This raises the question as to whether taxpayers' money can rightfully be used to subsidize industry in some areas at the expense of other areas. If government operates all the power business, who then pays the subsidy? The general public would be paying taxes to subsidize industry. And why should industry be subsidized in the first place?

Also, except in the electro-chemical industries, the cost of electric power is only about 1½ per cent of the cost of making the complete product. Material costs, freight rates, labor costs, are all substantially more important in the cost of the finished product than the cost of electricity. If subsidy is what is wanted, why subsidize an element of cost amounting to only about 1½ per cent of the cost of the finished product? Why not subsidize labor rates and the cost of all materials? Obviously, this leads to fallacious economics. The savings are not real. The benefits are not real.

Capacity

Some advocates promote government in the power business because of a claimed power shortage. Power supply has been tight in some areas—but there has been no real shortage. Electric companies could not buy generators during the war. The government needed them for ships and other war purposes.

But now, manufacturers are making all they can and electric companies are purchasing all they can get. Power plant reserves in July, 1949, were 17 per cent as compared with 12 per cent in July, 1948. In the peak month of December, 1949, reserves are estimate to be 12 per cent as compared to 5 pe cent in December, 1948.

In addition, the companies are no installing 6,000,000 kilowatts of add tional capacity to be in operation i 1950. This is 11 per cent of presen capacity.

And besides, the tight situation, no past, was not with the electric utilit companies but with the manufacturer which were in turn limited by manu facturing facilities, material and the lik The purchase of a generator by the gov ernment doesn't change that.

Some Advocates of Government in the Power Business Say It Will Help Free Enterprise

Yes, there is even the argument tha government in business helps free ente prise. Certainly it does not help fre enterprise so far as the power busine is concerned. It did not help free ente prise in the power business in Tennesse because there are no more electric com panies left in Tennessee. They were al forced out of business by the unfair com petition under the subsidized rates o the TVA.

The government has lost the taxe that those companies would now be pay ing, which means that all the taxpayer of all the other states are helping sub sidize the people of Tennessee. Th subsidy also goes for the cost of mone because TVA pays practically no inter est on the people's money used to build TVA. It cannot be said that the TVA has helped the power companies in Ten nessee.

The same holds for Nebraska. There are no more electric companies left in Nebraska. The same will hold true in any area of the country where the gov ernment goes directly into the power business with subsidized rates in compe tition with its citizens. The government will force the citizens out of busines and force the socialization of the power business.

As to helping free enterprise in other industries, there is a grave question. Naturally, the spending of hundreds of millions of dollars in any area will stim ulate business in that area as long as the spending continues.

But even if government is to spend simply to promote some business tempo rarily in an area, it doesn't seem logical to spend in a way that forces out of business an important industry that is already there.

In view of the above, and in view of the companies' offer of cooperation, it would seem that there must be some other reason for such intense advocacy of the government power program.

Socialization of Power

Let us face the facts. We are faced with a gradual trend toward socialism. Some call it creeping socialism, some call it soft socialism, some call it encroaching socialism. It is a philosophy of living. It is a form of society antagonistic to our form of American freedom—political freedom—economic freedom and above all individual freedom.

These trends toward socialism or away from it are not new. We read about them throughout ancient and modern history. The world is always changing. Either we are trending toward more government control and operation of the economy and less individual freedom, or we are trending away from government operation and control and toward more individual freedom.

In recent times, we have witnessed a change from individual freedom to a form of socialism in Germany, between World War I and World War II. We saw the same change in Italy.

We are at present witnessing a similar change in England.

In a modern society, this change from a democratic institution to a socialist one is brought about through government operation, ownership or control of the basic industries. In England, the British people voted for socialism by voting for a party that stood for government ownership and operation of the key industries. This means that the political party in power controls the economy of the nation.

This is said not in criticism of those who believe in socialism. They have as much right to their belief as we have in our belief that the greatest good for the greatest number of people is brought about through our system of free economy.

The danger as it exists in America is that we may inadvertently adopt some form of socialism without the people knowing all of the facts.

The American people are unlike the British people in that regard. The British openly debated the socialization of their key industries and they voted to adopt a government that stood for that socialization. Public opinion polls in England indicated that the people of England were in favor of such socialism. Similar polls in America indicate that few people are in favor of socialism. We have had a National Socialist Party in America for many years and each time it has run a candidate for president. That party has stood for the socialization of the key industries in America. At every election, that party receives about one vote out of one hundred.

And let us also face the fact that there has been a strong movement by a few individuals in this country calling for socialization of the power business as a step toward the gradual socialization of all industry.

As this river development program calls for government generation of incidental power at dams built for the control of water, the socialism problem is inseparable from the river development program.

If we are to avoid taking a long step toward socialism, we must avoid taking it in this river development program.

General Dwight D. Eisenhower had this to say concerning the trend toward the centralization of authority:

> ". . . Very frankly, I firmly believe that the army of persons who urge greater and greater centralization of authority and greater and greater dependence upon the Federal Treasury are really more dangerous to our form of government than any external threat that can possibly be arrayed against us."

That is a strong statement from a man who was called upon to lead our Armies against the array of forces that would have destroyed our freedoms from without.

PUBLIC OPINION

SINCE we are dealing with this problem from the standpoint of the public welfare, it would seem appropriate to determine what the public thinks. How familiar are they with river development problems? How well informed are they? How would they like to have the power handled?

Many surveys have been made. However, no attempt will be made here to give a complete report. Only a few samples of public opinion will be given.

1. A majority of the people think that all hydro power is cheaper than all steam power.

The fact is that a modern steam plant can make power cheaper than most hydro plants. This does not mean that there is not value to be achieved by coordinating the by-product electric power in the government projects with the existing steam plants in the area.

2. Most people think that electric power is a natural by-product of a flood control dam.

The fact is that a much larger and more expensive combination dam must be built to furnish both flood control and power.

3. Most people think that TVA earns a substantial net profit after paying both interest and taxes.

They don't know that TVA pays practically no interest nor do they know that TVA pays no federal taxes. TVA's annual report shows a net profit of $16,000,000 for the year 1948. If these figures are adjusted to reflect the market price of money that electric companies must pay and also the taxes that electric companies must pay, TVA shows a net loss of $22,000,000 in 1948 instead of a net profit.

When an American industry operating under our free enterprise principles shows such a loss, it becomes bankrupt.

4. A survey was made among members of rural electric cooperatives in the Southwestern states.
   a. Eighty-two per cent said service was satisfactory.
   b. Seventy-four per cent expressed good relations with the power company.
   c. Only 8 per cent expressed any knowledge of the Southwestern Power Administration, an agency of the Department of Interior that is endeavoring to build transmission lines at government expense to serve the cooperatives and other customers in the area.
   d. Only 6 per cent expressed any knowledge of a federal power program.
   e. Only 21 per cent expressed a need for a federal power program to get satisfactory wholesale rates.
   f. Only 25 per cent expressed a belief it would be better to get the power from the government.
   g. Only 7 per cent expressed a knowledge of the offer of the

electric companies of the area to purchase the government power and pass the benefits on to the public.

h. When the farmers were asked whether it would be better to get the power this way or for the government to build lines directly to serve the cooperatives, 40 per cent expressed a preference for buying through companies; 45 per cent had no opinion, and only 15 per cent expressed themselves as being in favor of the government lines.

i. Seventy-seven per cent of the farmers expressed themselves as thinking that the government building of power lines would mean an expensive duplication of lines.

j. The farmers were then asked whether they thought all electric power should be handled by the government or whether it should be handled by the companies. Forty-five per cent expressed themselves as being in favor of the companies; 33 per cent had no opinion, and only 22 per cent expressed themselves as being in favor of the government power. If we eliminate the "no opinion" vote, we find 67 per cent of the farmers as being in favor of the company operation of the power business and only 33 per cent in favor of the federal government operating all the power business.

Franchise and Municipal Ownership Elections

In 1948, there were 78 elections on either the question of granting a franchise to the electric company, or on the question of municipal ownership. In these 78 elections, 68, or 87 per cent, of them were in favor of the companies.

There is certainly no great public clamor for government power lines.

One cannot make a study of public opinion of this kind without coming to the conclusion, first, that the American people are basically fair and, second, that a substantial majority of them are not in favor of more government control and operation of business and, third, that a substantial majority are not in favor of the government operating the power business. The American people are not inclined toward socialism. They are individuals. They believe in the right of the individual to go into business and make a profit. They believe in the dignity of the individual. They want to preserve their individual freedom and the principles of the free enterprise system.

They are woefully uninformed on some of the basic principles of the economic system and how it functions to their benefit, but we cannot blame the American people for being so uninformed. We must examine ourselves to see if possibly we who operate business, we who are educators, we who are editors, we who belong to the "opinion-forming group" should not be giving more facts and more information to th American people.

And, if we are to let these opinion of the American people themselves hav any influence upon us in deciding thi basic question today as to whether govern ment power is to be distributed throug the electric companies or whether it shal be distributed directly by the federa government, we cannot escape the con clusion that the American people wan this power distributed through existing systems. They want all the benefits o the government power to which the are entitled. The electric companie have offered to pass these benefits to them.

RECOMMENDED SOLUTION IN THE PUBLIC INTEREST

I SUBMIT then that the role of the electric companies respecting river development is to offer to cooperate with the government and the people on the river development program by absorbing the government power, paying a fair price for it, and passing all the savings and all the benefits on to the public in the manner desired by the American people themselves. Furthermore, I submit that in carrying out the program in this fashion, we will be doing our part in a small way in helping to preserve the principles of individual freedom—in helping to avoid the catastrophe that would result from gravitation to a socialist state.

It is fortunate that we have meetings of this kind where there can be a free exchange of ideas on all of these basic questions; where all the interested parties may express their viewpoints. It is an essentially broadminded undertaking.

On this question of the electric power from government dams, I suggest that the question be debated openly and fully in halls of this kind, in meetings throughout the country and on the floor of Congress. I believe that when that full debate has been had the conclusion will be inescapable. The American people do not want socialization of one of their key industries. They would rather see a partnership between the electric companies and the government and the people in river development.

And following such a debate, then let the Congress establish a power policy we can all follow in carrying out the principles outlined in the first part of this paper: The maximum benefits to the people at minimum cost and the preservation of our American principles of individual freedom.

APPENDIX A—FLOOD CONTROL ACT OF 1944

SECTION 5. Electric power and energy generated at reservoir projects under the control of the War Department and in the opinion of the Secretary of War not required in the operation of such projects shall be delivered to the Secretary of the Interior, who shall transmit and dispose of such power and energy in such manner as to encourage the most widespread use thereof at the lowest possible rates to consumers consistent with sound business principles, the rate schedules to become effective upon confirmation and approval by the Federal Power Commission. Rate schedules shall be drawn having regard to the recovery (upon the basis of the application of such rate schedules to the capacity of the electric facilities of the projects) of the cost of producing and transmitting such electric energy, including the amortization of the capital investment allocated to power over a reasonable period of years. Preference in the sale of such power and energy shall be given to public bodies and cooperatives. The Secretary of the Interior is authorized, from funds to be appropriated by the Congress, to construct or acquire, by purchase or other agreement, only such transmission lines and related facilities as may be necessary in order to make the power and energy generated at said projects available in wholesale quantities for sale on fair and reasonable terms and conditions to facilities owned by the Federal Government, public bodies, cooperatives, and privately owned companies. All monies received from such sales shall be deposited in the Treasury of the United States as miscellaneous receipts.

Washington Today—and the Business Man

By Francis X. Welch

Washington Editor, Telephony, *and Managing Editor,* Public Utilities Fortnightly

An address before the convention of the Ohio Independent Telephone Association, Columbus, Ohio

IN one hundred years, the record of American business performance has transformed a thrifty, realistic, cautious population of practical pioneers, who carefully counted their change and bit their silver coins, into a nation of good-natured, incurable optimists, who take miracles as a matter of course and become suspicious and critical only when somebody says that they cannot have something they want.

They Laughed at Pioneers

Our great-grandfathers laughed at Fulton's steamboat. Newspaper editors poured scorn on Morse's telegraph. Sir Walter Scott called the idea of gas illumination the bragging of a lunatic's mind. Bell and Edison in the respective fields of telephone and electric light discoveries were discouraged for years by the refusal of the great masses of our people to take their inventions seriously or consider them as anything but interesting toys.

Then, as the "know how" of business production and business salesmanship steadily changed these toys into the household necessities of everyday life, mass psychology changed with it. The pendulum swung all the way over. The telephone and electric power came to nearly every home. There followed the automobile, radio, television, and all the wonderful gadgets of labor-saving appliances. Our people have become a nation of believers in the impossible. We live in the age of the pushbutton, and have an almost childish faith in it.

Many firmly believe that there will soon come a day when nobody will have to work very much, and that continuous eating, drinking, sleeping, and entertainment will simply be a question of pushing the right buttons on the right gadgets. We even hear talk of fighting our next war with pushbuttons. Unfortunately, there can never be such a thing as an economic pushbutton. Wouldn't it be a fine thing if we just had a pushbutton we could press and get rid of debt? But we cannot. Our scientists may produce a pushbutton to make war. But they can never produce a pushbutton to pay for war.

Made to Order for Politicians

Naturally this mass psychology of expecting miracles as a matter of course is made to order for the politician who makes a career of making promises.

President Truman won his election last fall largely by harping on the issue of high prices and inflation. He did not point out that federal government spending at the rate of 16 per cent of our national income, or that taxation at the combined federal, state, and local rate of $53 billion, or one-fourth of our national income, are undoubtedly the two greatest inflationary factors pressing on the nation's economic life today. On the contrary, we were told that much of this spending is necessary to spread social benefits to the people, and that much of the taxation is necessary to drain off excessive profits of business.

In this way does our federal government move toward a position where all groups and all classes look to it for necessary benefits. Although government, by its very nature, can neither produce wealth nor operate our business machinery effectively, it has seized the spotlight in the public eye as the dispenser of all social blessings. It taxes business to spend public funds, and it spends public funds to extend its control over business. One might paraphrase the Gospel, without irreverence by saying: "The government giveth and the government taketh away, blessed be the name of government."

History of the "Welfare States"

The idea of a central government trying to do everything for its people is not new. It has been tried before—and never successfully. Let us, briefly, call the roll of history on past experiments in the so-called "welfare state." There was ancient Greece, mother of art and culture, at the climax of her glory in the golden age of Pericles. He embarked on such a high spending program to provide benefits and entertainment for Greek citizens that he was forced to gamble on a foreign war to bail out his public treasury. He lost and that was the end of Greek leadership.

Recent History the Same

Rome picked up the torch and mastered the world through nearly nine centuries of military and commercial supremacy. What finally brought the proud empire to her knees? Not the barbarians hammering at the gates; they merely took over the corpse after the spirit had departed. *No, it was the benevolent paternalism of the Caesars, who drained away the substance of the Roman people to gain political favor with gifts of bread and circuses.* As the great historian Gibbon said, about this decline and fall of Rome: "The pressure of public burden was an increasing disability which ate the very heart out of the capitalist and the laborer alike; there was no hope to inspire energy or encourage enterprise and the gradual delay culminated in utter collapse."

With the discovery of the new world at the end of the Fifteenth Century, Spain assumed world leadership based on world-wide commercial enterprise. But again such leadership was lost when Spain tried to milk her colonies to heap benefits on her citizens at home. It became a case of *"everything being done for the people and nothing being done by the people."* As another noted historian, Henry Thomas Buckle, put it: "It was when things were most prosperous on the surface that they were most rotten at the foundation."

Within our own memories, the Fascist countries of Europe held out to their people the Utopian plan of full employment, security, and better homes—all to be achieved by planned economy financed by government borrowing and spending, plus government regulation of all capital, labor, and individual activity, eventually including rigid control of public speech, press, and religion. You can

still see the end of this road in the rubble and dust of defeated Germany.

And so, today, the dictatorship countries of the Iron Curtain are gathering about us like buzzards, waiting for an internal American collapse which has been confidently predicted for many months by the Moscow newspapers. With every step our government takes along the primrose path of state socialism—with every new blow and strain imposed on our American business enterprise — these communistic harpies, waiting to prey on our vitals, say to one another: "It won't be long now. We can wait. See, Marx was right—when he said that capitalism nurses within its bosom the seed of its own destruction."

Danger Comes from Within

That is a rather dark and cynical picture. I have purposely painted it so to emphasize my own Washington observer's viewpoint that the danger to our business enterprise system comes not from without but within. We need fear no foreign ideology as much as our purely domestic brand of bribing our people with their own money.

It may shock some who believe or want to believe that the people are always right in their decisions. The trouble is, we are dealing here not with mere political decisions but with hard economic realities. I only wish they *could* be settled by a vote of the people. Unfortunately, all the argument about a people's mandate to do these things is beside the point. Two and two still make four, both before and after election day. If the tax-and-spend philosophy had its pitfalls and its limitations before the last election, it still has these same limitations today.

I realize that you men of business, who must know something of practical economics, are aware of these things. But an increasing number of our people seem quite willing to have the federal government take over responsibility for their housing, their health, old-age security, minimum wages and employment. Why? Because to a good many of these people these services coming from the federal government appear to be free.

Let us go back, now, to the second point raised in connection with this trend toward social benefits. Could government action have been avoided if business had done the job in the beginning? That may seem like an academic, if not futile, question to ask, in this day when we have traveled so far along the road toward paternalistic government. As practical businessmen, I think you will agree that there is no hope whatever to expect that we will ever return to the simple philosophy of Thomas Jefferson that the best government is the least government. For better or worse, a majority of people in this country just don't believe that any more. All kinds and all classes want government benefits and are quite willing to sacrifice considerable freedom of action and control of their own affairs in order to get them.

In spite of that, I think it is a wholesome and humble thing for businessmen to consider the lost opportunity they had, in years gone by, to anticipate some of these things the government is doing or trying to do, often at unnecessary expense and in a blundering way. It may well be that industry, acting on its own before government entered these fields, could have done a better job.

If all major industries of this country had gotten together, a quarter of a century ago, on old-age retirement plans, unemployment benefits, and voluntary industrial codes for collective bargaining and minimum wages and hours, they might well have eliminated the need for the Wagner Act and the Fair Labor Standards Act. Such plans just were not forthcoming. What I'm trying to say is that by spending five cents of its own money, a quarter of a century ago, industry might have avoided spending 25 cents today by government collected taxes. Less than 10 million dollars would have bought Muscle Shoals from the government in 1925, and saved the electric industry the entering wedge of federal socialism in the form of the TVA. But somebody was looking for a government bargain that didn't come.

Business Not Always Alert

I could go on with other examples of this kind of admittedly hindsighted foresight. I merely want to point out that business has not always been too alert to forestall the demand for government action. We all know that there never has been a time when some segment of business has not protested against government reforms. The setting up of the regulatory commissions in your own utility business, is an example. We have to admit that the country has survived all these things and has benefited by many of them. Only the other day, the medical profession brought forth a voluntary plan for giving medical aid to the needy without government interference. It was a fine plan; but it may be too late. Th politicians already have their teeth sun into this juicy plum of paternalism.

Next, we may ask whether the peop *need* all these benefits, especially if th only way to secure them is by wrecking the system that made the country wha it is. After all, our system of privat enterprise is already yielding more bene fits to more people than any other sy tem. What is the limit—or is there an limit to the right of the people to enjo more and more benefits, regardless o where they come from, or who pays fo them?

There, we have touched upon th crux of this whole problem of relatio ship between government and busines If we could work out the answer to tha question, fairly and successfully, w would never have to worry abou whether our system of business ente prise will endure or whether it will b swallowed up by government, alon with our individual rights and liberti The answer, as I see it, lies in disti guishing between a government of fr men and a beehive society of regiment security numbers. It is the age-old di tinction between rendering to Caes the things that are Caesar's, and rende ing to the spirit the things of the spir

We cannot blame our people f wanting security and equal opportuniti —no matter how much these are deni in other lands. It is as natural as huma history. *The more one contemplates th universal and persistent determinati of all ages and all races to improve th fortune in this world, the more the tru honest observer is forced to the concl sion that it is part of the intent an purpose of a Divine Plan that mankin should enjoy as happy and as well r a universe as his talents and efforts c command. There is nothing selfish o ignoble about such an aspiration.*

Equal Opportunity Is the Key

But equality of opportunity, which the constitutional right of every Ame can citizen, is not the same thing as equal distribution of income, or of pro erty. That could only come about by unjust seizure and distribution wealth. It would not endure, even if were accomplished, because we kno that all men were *not* created equal talent or ability. There is where so of our political friends make their m take. They confuse the ideal of equal of opportunity with the impossible ill sion of equality of wealth.

American business and American prosperity are based on equal opportunity. Everybody should get a chance to win the prize of material security, if not actual wealth. Where some of our citizens are unduly handicapped, in starting their race for life, our American plan has been to help them overcome some of the handicaps. We have done this with free public education, protection of workers' rights, and other forms of assistance, where necessary. These efforts have been to get them started on their own—never to control the outcome of the race. Our system has been quite different from one which ordains that there should be no rewards for those who put forth special effort to win the race. The strictly communist theory of equality is to fix the race of life so that nobody wins. There are no rewards, only penalties. Everybody is reduced to the dead level of the beehive, whether they are workers or drones.

The great French statesman, Count de Tocqueville, writing critically of the dangers inherent in our American democracy, said over a hundred years ago (my own very free translation):

"There is now so much popular emphasis on so-called equality that it is actually possible to sell a dictatorship to a free people provided it is sold under a promise that it will further this leveling-off process, whereby all citizens eventually would be cut down to the same dreary pattern of mass mediocrity."

Liberals Are Inconsistent

Many of our good people are confused about this fundamental difference. They have been confused by self-professed liberals who have dominated the Washington scene for nearly two decades. One of the things about Washington which has impressed me, as an observer, more than anything else, is the intellectual dishonesty and inconsistency of the so-called liberal—especially the professional liberal.

The Washington liberal of today is the direct successor of the old-time medicine man, who used to peddle snake oil out of the tail gate of torch wagons to the unsuspecting yokels. Their particular brand of snake oil is government control—the modern cure-all—good for everything that ails man or beast.

Whether you are bothered with high prices, or low income, whether you want cheap electric power, or expensive labor unions, whether your taxes are too high, or your personal feelings are too low because you cannot move in the right social circles—just step right up and take a big dose of this guaranteed snake oil of government interference and control. This great discovery, we are told, can not only do all these conflicting things at the same time, but do it better and cheaper than anything else. But let us not kid ourselves—this is no money back guarantee!

I accuse such liberalism of dishonesty in introducing federal Socialism in the electric industry under the false disguise of navigation, irrigation, and flood control when everybody but the Supreme Court knows that much of it is primarily a government adventure in the public power business. I accuse such liberalism of dishonesty in objecting to and obstructing congressional investigation into the loyalty of public officials, professors, film writers, and other characters suspected of spreading communist poison, while a few years ago they laughed at congressional committee invasion of private rights of businessmen for the sake of anti-business publicity. I accuse such liberalism of dishonesty in calling for more and more reform, regulation, and taxation of business while resisting any effort to reform, regulate, or tax government in business.

I accuse such liberalism of dishonesty in calling for an end of business lobbying and propaganda, while ignoring the biggest and most effective propaganda in existence—that of the federal agencies conducted at the public expense. I accuse such liberalism of dishonesty in its obsession with the dangers of business growth and monopoly while actively supporting the mushroom growth of government which, as former President Hoover tells us, has increased its army of employees from 500,000 to 2,200,000 since 1933.

1,800 Federal Agencies

Federal government today consists of over 1800 agencies, costing $40 billion a year to operate. Its combination of 37 banking agencies alone controls an investment of $10 billion with liabilities of $100 billion—far displacing Wall Street in the scale of financial operations. Compare these figures with our two greatest private corporations, General Motors, with $4 billion receipts in 1948, employing 380,000; and the Bell System, under American Telephone & Telegraph Co., with $2,625,000,000 operating revenues and some 650,000 employees. The Hoover Commission recently denounced the practice of government lending corporations, such as Rural Electrification Administration, concealing subsidies on loans through failure to charge administration expenses. Direct lending, this report said, should be used sparingly and only in emergencies and at full cost of interest on government borrowings.

But the most menacing illusion of liberalism is the insidious idea that so-called cheap government financing, supported by borrowings and taxes, can be properly used to run our American business in place of the private investment upon which our nation was founded and grew to its present state of strength and world leadership. You in the telephone business must especially be on your guard on this front because steps are now being taken in Washington to put the thin edge of the wedge, the camel's nose of government, under the tent of your private enterprise.

Only Modest Beginning

It is only a modest beginning—the rural area. You are being told that it is to help you to get cheap government money, to help you to do a better job for the farmer. There is no thought of government ownership. No indeed. These politicians really love you and your business just as they love the farmer and his vote. They want to help you to get ahead. You are being told that you ought to be glad and grateful that the government is taking such an interest in your business. Well, when the camel's nose gets under the tent, the first thing we notice is, that the place begins to smell like a camel.

That was the way it started with the electric companies back in 1933. The government just wanted to set up yardsticks to help them to do a better job. Today the yardsticks have all had pups and grandpups, and private power has been run clean out of two states with a couple of more coming up. Government produced power has risen from 4 to 20 per cent of all produced. And we now hear the government talking about yardsticks for the steel industry. When are we going to learn that once the government gets its little finger into private business it won't stop until it is all the way in?

The very fact that the government claims private industry needs help in financing shows that something has been scaring the investor out of his traditional role. Why *is* the investor timid? Why

is it difficult for the telephone and other utility businesses to sell junior securities in the open market? I'll tell you why. The real problem of the investor is the same as the real problem in most American homes. It is the *tax* bill, not the telephone or the medical bills. It's the tax quarter out of every dollar income, not the trifling bills for utility service—about the cheapest thing he buys. In the long run, private business, generally, would be better off if it rang doorbells, and buttonholed customers to sell its securities rather than contribute to this snowballing federal tax-debt theory of government borrowings.

Money "In Own Backyard"

Maybe the lush war years of easy money have made some of us forget how to sell securities. Maybe we can't go to New York any more and whistle for an underwriter. So what? The money is right here in our own backyard if we want to go out and get it. But it's going to take some old-time salesmanship—the kind that built this business in years past.

Government financing is just another name for government control—particularly if it comes through an openly anti-business agency which is more concerned about coddling tax-exempt cooperatives than helping the private enterprise system to which it pays lip service.

The danger in this approach toward Socialism by the easy route of government financing is that it catches us off guard. We are told, rightfully, that our government leaders are not communists or socialists. Like President Truman, they are mostly as old-fashioned Americans as fried potatoes and corn on the cob. They hate communists. They stand at our front door with shotguns and dare the red rascals to show their faces.

Backdoor Socialism

That's fine, as far as it goes. But what about the back door? When Socialism comes to America, it won't come in the front door. It won't come goose-stepping down the street, wearing black shirts or waving a red flag. No, my friends, back-door Socialism is more insidious. There is no revolution. No dramatic coup d'etat, or sudden rush to "take over" private business. Instead we have what General Eisenhower has so truthfully called "creeping Socialism"—a slow, gradual process whereby the area of tax-paying free enterprise becomes more burdened and constricted by an ever-increasing area of tax-eating government enterprise.

Going on for Two Decades

This has been going on before our very eyes in Washington for the past two decades. It started even before the New Deal. It is being accomplished on the whole by perfectly sincere men of goodwill. But we have tragic examples before us. The economies of Great Britain, France, and what is left of Germany are socialist, despite the fact that governments and occupying authorities do not hold in their hands legal title to the factories and farms of those nations. The essence of European Socialism is not that the state owns the means of production and distribution. Even Hitler didn't care who kept the cow as long as his Nazi state could get all the milk. Backdoor Socialism means a complex process of controls over prices, materials, imports, and exports, with the government taking upon itself such enormous functions that the private citizen is either subjected to perpetual inflation or crushed beneath a staggering load of taxes.

We have even used our American capital to finance this march of Socialism abroad. Winston Churchill recently demanded to know, on the floor of the British House of Commons: "How the socialist ministers can go about bragging of their socialist program and of the nationalization of industry on party lines, how they can deride the system of free enterprise and capitalism which makes America great and wealthy, and then, at the same time, eagerly seek aid which has hitherto been so generously granted from across the Atlantic—that is a grimace which baffles the limitations of our language to explain."

Recently the London *Economist* placed the present price of British socialist government at 40 per cent of all income, personal and corporate, and asked editorially whether the government was not killing the motive power that is keeping it alive. What does it profit a man if he gets free medical service, free baby-sitting service or what not, if the dockage on his pay check is running toward half the total? What's *free* about it?

Well, that is the prospective Washington picture of government and business. It is not a pretty picture. But I find I have painted the politician in Washington as if he were the chief trouble, the main devil, and principal villain in the piece. Unfortunately the answer is not as simple as that. Honesty compels me to say to you that the average politician is as conscientious, as hard working, and as patriotic an American, according to his lights, as any of us, by and large.

There's a Lack of Understanding

What then is the main trouble? As I see it, it is simply lack of understanding. The people are confused, don't know the facts; therefore, the politician cannot act to protect our system. In a recent survey entitled "Big Business on the Spot," Opinion Research Corp. found that the public is growing more critical of business. Although industry has shown marked restraint in its pricing, 63 per cent of the public is unwilling to give industry credit for trying to hold prices down. Almost 65 per cent of the public thinks industry is deliberately holding down production to keep prices up. That's not all—54 per cent think leading companies are working together and that sharp competition does not exist. The man in the street thinks profits are too high—25 per cent on the average.

Why are such impressions popular? Because they are true? No, these fallacies are popular because industry is not getting its story across. How can this Iron Curtain between business and the people be torn down? Can it be done at all? Are the people deaf to anything except promises of more benefits and services?

It *can* be done. It will take time and there isn't much time. It will take tact, where there isn't much restraint on the other side. It will take sacrifice and resourcefulness. But if the people of this country once get mad enough about this thing, they will act and act vigorously. In the past we have had folks in this country who thought they were running the show and could never be overruled. They were wrong.

Barons of Bureaucracy

We had the prohibitionists in the twenties. We had the bankers and security dealers and some other businessmen in the thirties. We had the labor union bosses in the early forties. Each of these have in turn been subjected to disciplinary laws because the people got mad enough to act. Now it's the turn of the barons of bureaucracy, who have had everything their own way for nearly a score of years. I predict with confidence that if the people in the country

can be made to see that the cancerous growth of bureaucracy is slowly strangling our enterprise system and will eventually threaten our liberties, then the people will not only clean house but make a good, thorough job of it.

Problem Is Not in Washington

No, the problem is not in Washington. It is right here, in the north, south, east and west. It lies in convincing the people—by word of mouth, by editorials, by advertising, by lobbying, by propaganda—by any and all means which can show the light, so the people can find their way. The time is short. We cannot stay on the present road much longer without serious damage.

Americans for a century and a half supported their government, kept it well out of their affairs, and so became the earth's richest people. Now, more and more, Americans are asking their government to support them. Here is where business must throw the light for the American people. I see American business now standing at the fork of three possible roads:

1. It can stay on the side lines and wait for some political accident to happen, such as the Bull Moose split in the G.O.P. in 1912. That's taking a long chance.
2. It can crawl into a hole and wait for some economic accident to happen, such as the depression of the thirties which turned prevailing governments out of power all over the world, both liberal and conservative. That's taking an even longer chance.
3. It can stop bucking the prevailing current by hopeless upstream gestures. It can, like a sailing vessel, use these very currents to give intelligent direction to its course. It must win over labor and unions by making them see where their real interest lies. It must win over the consumer in the same way. It must win over the farmer. It must spend some money and use its "know how" to whip this problem of telling the truth to a public which has been systematically deceived at its own expense. It must make concessions and alliances with a united business front—not just the telephone business, or the several utility businesses, but all honest business, large and small. It must infiltrate this encroachment by government, in order to turn it back to the proper and productive channels of government.

Is it the function of business to engage in politics? I say it is. I go further and say that unless business honestly gets into politics with both hands and feet, politics will get into business so far you won't know one from the other. Business—taxpaying, productive, private—is the main hope of freedom of the American people today.

As businessmen, you already know the truth of what I have said. It, therefore, becomes your duty to pass the truth on. As American businessmen you cannot in conscience, evade this responsibility. The alternative to a default in this duty by business could mean a ruthless socialist dictatorship, a knife in the back of industry, a pistol at the head of labor, and a ring through the nose of the consuming public. As businessmen you must take up this cross and bear it bravely to a triumphant victory for all of us.

The 1949 Planned Lighting Awards

to electric utility operating companies and their personnel, for outstanding accomplishments in Planned Lighting promotional and educational activities during the calendar year 1949, offer

Prizes Totaling $1400.00

with plaques for the companies and cash awards to persons responsible in the companies for

Commercial Lighting—Three equal prizes, each of $150 and bronze plaque.
Residential Lighting—Two equal prizes, each of $150 and bronze plaque.
Industrial Lighting—One prize of $150 and bronze plaque.

Detailed terms of the Planned Lighting Awards are available from the Commercial Director, EEI. Entries must be received by Feb. 15, 1950, and the Awards will be presented at the 1950 EEI Sales Conference.

Offered by

EDISON ELECTRIC INSTITUTE — BETTER LIGHT-BETTER SIGHT BUREAU

Fourth World Power Conference in London, July, 1950

"WORLD Energy Resources and the Production of Power" is the central theme of the Fourth World Power Conference, to be held at London, in July, 1950. It is to be treated from the engineering and economic viewpoints, as distinct from the administrative and political. The tentative program, reported so far, includes 136 papers from 20 countries.

Meetings of the Conference are scheduled in London from July 10 to 15, inclusive, and tours of Great Britain are being arranged for the following week, to end on Sunday, July 23.

Steamships for Atlantic crossings next July are already heavily booked. Reservations will soon be hard to get. The British committee on arrangements calls attention to the urgency of this matter.

Thos. Cook & Sons, Ltd., have been designated by the British committee as official travel and hotel agents for the Conference. Their main office in the United States is at 587 Fifth Avenue, New York 17, New York. Mr. C. L. Hill, at that office, is familiar with the Conference arrangements.

A bulletin giving more details of the program and arrangements is expected to be available by November, together with application forms for Conference membership. Inquiries may be addressed to United States National Committee, World Power Conference, 4 Irving Place, New York 3, N. Y.

Industrial Relations Conference at Chicago To Deal With Key Problems of Today

By S. F. Leahy
Detroit Edison Co.
Chairman, Industrial Relations Committee, EEI

INDUSTRY can prosper—can continue to grow successfully—only with good industrial relations. Most of us agree on this, just as we agree that we can have good industrial relations only if our employees and managements get along well. In spite of this agreement, however, many of the big problems that industry—including our own electric utility industry—faces today are in the area of employee relations. Often the problems arise from misunderstandings. Employees don't understand why it isn't possible to raise their wages—management, in turn, may not understand what really bothers employees about a pension plan, for example.

An important aid to industry in building better industrial relations is the industrial relations department. What these departments are doing in helping their companies to improve employee relations will be the subject of the Third Annual EEI Conference on Industrial Relations. This timely and important conference will be held at the Edgewater Beach Hotel in Chicago, Illinois, on October 26-28, 1949.

The EEI Industrial Relations Committee is sponsoring the conference and has arranged a series of meetings that should prove valuable. The subjects for discussion are those that EEI members indicated they wanted. As at the St. Louis and Cincinnati conferences, members will form small discussion groups of 15 to 20. Speakers will cover each group, in turn. In this way a maximum amount of time can be devoted to the problems that each group is interested in. A real opportunity will be provided for exchanging information and ideas between companies and in sharing experiences. It is this sort of activity that has made the Industrial Relations Conferences of real worth to those who attend.

In looking over the program shown on this page, you will recognize that many of the functions of a typical industrial relations department have been covered. Emphasis is given to those activities that are proving successful. The Committee has been fortunate in getting discussion leaders who are well qualified and active in the areas they are handling.

As the keynote dinner speaker, Wednesday evening, October 26, James J. Nance, President of Hotpoint Incorporated, will tell the story behind Hotpoint's successful personnel administration program.

All in all, the Industrial Relations Committee looks forward to a successful conference. For the electric utility companies planning to participate, the committee has suggested registration of the principal personnel executive and one or two of his assistants. Registrations should be made early since the success of the conference depends a great deal on keeping discussion groups small in size. This may limit total enrollment to some degree. The conference fee of $15 includes the keynote dinner and luncheons as well as a handbook of conference summaries.

Reservations should be sent to Mr. E. S. Evans, Secretary of the Industrial Relations Committee, Edison Electric Institute, 420 Lexington Avenue, New York 17, New York.

INDUSTRIAL RELATIONS CONFERENCE PROGRAM

October 26

A. Pensions
FRANK GLEESON, Northern States Power Company
A. J. PAULL, The Cleveland Electric Illuminating Company

B. Supervisory Training
J. P. FLEMMING, The Cleveland Electric Illuminating Company
R. C. BUELL, Ebasco Services Inc.

C. Presentation of Employee Problems
F. L. LARKIN, Wisconsin Electric Company
P. A. RICE, West Penn Power Company

Dinner Speaker
JAMES J. NANCE, President, Hotpoint Inc.

October 27

D. Testing
M. S. VITELES, Philadelphia Electric Company
R. KUCHLER, Wisconsin Electric Power

E. Employee Opinion and Attitude Surveys
R. E. SCHWAB, The Detroit Edison Company
H. M. SHARP, Buffalo Niagara Electric Corporation

F. Employee Communication Programs
O. VAN RYE, New England Power Service Company
W. H. SENYARD, Louisiana Power and Light Company

October 28

G. Personnel Research
GEORGE FEWKES, Philadelphia Electric Company
B. K. SWARTZ, The Detroit Edison Company

H. Effect of Employee Information on Public Relations
C. B. BOULET, Wisconsin Public Service Corporation
E. J. BRILL, Pennsylvania Power and Light Company

I. Executive Development
W. HUGHES, Rochester Gas and Electric Company
J. C. ARNELL, Consolidated Edison Company of N. Y., Inc.

Operation of Synchronous Machines for Continuity of Service on the Southern California Edison Company System

Part II—Operating Experience With Ungrounded Neutral

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THE question of whether or not machines should be operated grounded or ungrounded has received much attention in the past and is not completely settled yet. However, the present practice of the Southern California Edison Company is to operate all synchronous machines ungrounded and equipped with ground detecting devices.

Operating Records Prior to 1933

Until 1933, most of the Southern California Edison Company's generators were solidly grounded, but the grounded neutrals were gradually abandoned and ground detecting devices installed.

A study of the operating records previous to 1933, disclosed that many of the older generator windings were breaking down to ground. Each year the new generator installations were increasing in capacity rating. On machines with solidly grounded neutrals, armature coils and usually a large section of stator iron would have to be replaced each time a ground fault occurred.

Discussions were often held relative to the merits and demerits of ungrounding generator neutrals and it was decided to try out the operation of some machines ungrounded but equipped with a ground detection scheme.

The first application of ground detectors on the Southern California Edison System used three potential transformers, wye connected to the generator bus and with the potential transformer neutral grounded. The secondary was connected in delta and the voltage from the unclosed corner of the delta was used to operate an alarm relay and voltmeter. This scheme was used on a 28,000-kva, 11,500-v hydroelectric generator in December, 1933.

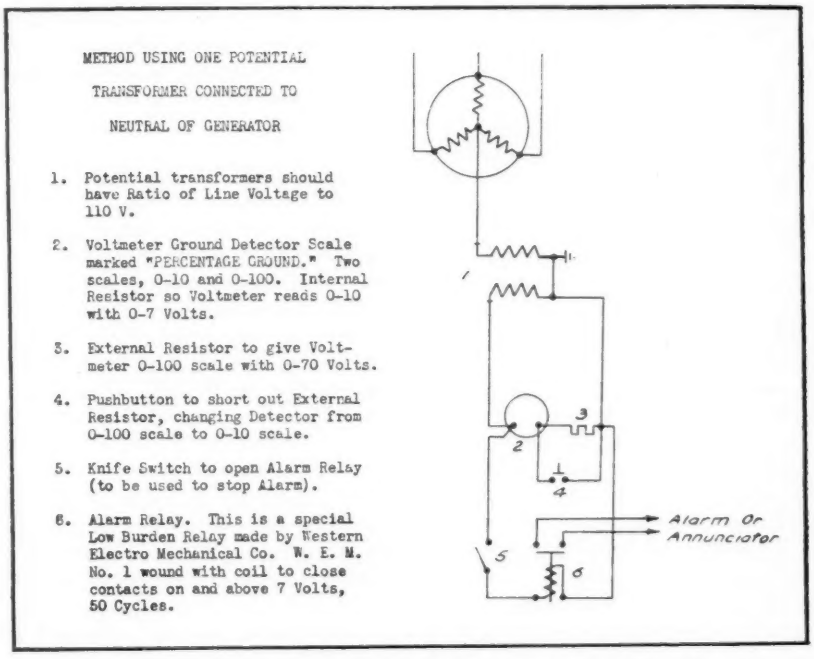

METHOD USING ONE POTENTIAL
TRANSFORMER CONNECTED TO
NEUTRAL OF GENERATOR
1. Potential transformers should have Ratio of Line Voltage to 110 V.
2. Voltmeter Ground Detector Scale marked "PERCENTAGE GROUND." Two scales, 0-10 and 0-100. Internal Resistor so Voltmeter reads 0-10 with 0-7 Volts.
3. External Resistor to give Voltmeter 0-100 scale with 0-70 Volts.
4. Pushbutton to short out External Resistor, changing Detector from 0-100 scale to 0-10 scale.
5. Knife Switch to open Alarm Relay (to be used to stop Alarm).
6. Alarm Relay. This is a special Low Burden Relay made by Western Electro Mechanical Co. W. E. M. No. 1 wound with coil to close contacts on and above 7 Volts, 50 Cycles.
1
2
3
4
5
6
Alarm Or Annunciator

Fig. 1—Ground Detector Using Single Potential-Type Transformer Connected to Generator Neutral

No operation had occurred on the ground detector since its installation in March of 1934, and it was decided to try a detector at another location.

The method of detecting grounds by using one potential transformer between the generator neutral and ground was studied and it was determined to install the single potential-type detector on a 60,000-kva, 11,500-v generator as shown by Fig. 1. This installation was made March 26, 1934.

In 1935, four more ground detectors were added to the system. Two of them were connected to two generators which fed into one transformer bank. The other two were connected according to the single-potential transformer scheme. Three of the generators were

rated 28,500-kva, 11,500-v, and the other was rated 17,500-kva, 6600-v.

During 1936, five more generators were equipped with ground detectors and connected to operate with ungrounded neutrals. Up to this time, no operation of any of the ground detectors had taken place, although they were installed in the most vulnerable places, and the operators were checking the readings once a shift.

Operating Records, 1936-1938

On April 26, 1936, a 17,500-kva, 6600-v generator caught fire when a 150-kv line was dropped. The machine relayed on differential and thirty armature coils were damaged. A section of stator iron 18 in. by 36 in. was replaced. A ground detector was connected to this machine May 8, 1936, during the repair. No operation of this detector has occurred since that date.

Ground detectors were installed on two 45,000-kva, 11,500-v and on four 5000-kva, 2300-v generators during 1938. Seven cases of generator trouble were recorded during 1938, and the experience with ground detectors began.

At the station where the first three potential-type detectors had been installed in 1933, the 28,000-kva machine failed when the 220-kv line to the station relayed. High voltage caused the generator to break down to ground and it relayed on phase differential. Fifteen armature coils had to be replaced, but there was no iron damage. We were not concerned about this case of trouble because this generator had operated five years without trouble since the detector had been installed, and it was known in 1929 that the generator insulation was not good.

A momentary ground indication occurred at the station where the detectors had just been installed on the 5000-kva, 2300-v units, but no trouble developed.

On June 17, 1938, a 25,000-kva, 11,500-v generator relayed on differential This unit was being operated with the neutral solidly grounded. The trouble had been caused by a mouse that had caused a phase-to-ground fault which developed into a three-phase fault where the leads came up from a tunnel. Considerable damage was done to the generator leads and busses. This station was equipped with ground detectors in 1939.

Ground indication showed up June 28, 1938, on one of the 17,500-kva, 6600-v generators that had been equipped with detectors in 1936. The machine was taken off the line and it was found that some of the cables in the "A" Phase from the generator to the bus were in bad condition. New cables were installed. It is believed that the operation of the ground detector in this case prevented more extensive damage that would have occurred if the ground had developed into a power discharge before being discovered.

A second ground indication showed up on this machine in August, 1938. This time the "B" Phase cables were found bad and were replaced. The remaining "C" phase cables were not replaced at this time because it was felt that with the ground detector in operation it would be safe practice to obtain the maximum life from the remaining cables. The remaining cables are still in service.

These two cases showed the benefit of the ground detector installation. In each case, twenty minutes had elapsed from the time the faults were detected until the generator was taken off the line.

Lizard Causes Fault

On September 14, 1938, at the station where the mouse had caused the trouble, and where the machines were still being operated with the neutrals solidly grounded, the transformer bank relayed on differential. This time a lizard had caused a phase-to-ground fault on the vertical bus involving the low side of the transformer bank. A ground detector installation would have detected a phase-to-ground fault on either the transformer bank low side windings, the bus between the transformer and generator, or the generator windings. Ground detectors were connected at this station in March, 1939.

The last case in 1938 occurred on November 22. This was on a 60,000-kva, 11,500-v generator that had been equipped with a detector March 26, 1934. Momentary grounds were indicated on the neutral ground detector. The grounds did not stay on long enough to get an accurate reading, but an investigation disclosed that a pillar-type insulator on a "B" phase 11-kv lead to the transformer bank had flashed to ground due to dust and fog coming into the building. The generator was not taken off the line until November 24, 1938.

More confidence was gained from this installation, because this steam unit was badly needed for capacity at the time, and two days passed before it could be spared. This detector had prevented a differential operation which would have caused a severe generation problem.

Fourteen new ground detectors were added in 1939. These were installed on synchronous condensers, two 100,000-kva steam-electric generators, and an 82,500-kva hydroelectric generator.

Operating Records, 1939-1940

On June 28, 1939, a ground alarm was indicated on the generator that had previously developed cable trouble. At 1:00 p. m. on the same day, the ground indication returned to normal and no further trouble has occurred to date. This ground detector has been in operation since May, 1936.

Another case of trouble occurred October 8, 1939, on the 28,000-kva generator which was the first to have the three potential-type detector installed. This generator relayed on differential when 220-kv switching was being done. The machine caught fire and two armature coils were burned, but no iron was damaged. It was known that insulation in this generator was weak and that it was occasionally subjected to high voltage, so a new Class "B" winding was installed. The original three potential-transformer-type ground detector was replaced with the single potential transformer type which conforms to the standard method now used.

On November 6, 1939, a number of ground alarms were indicated at the Powerhouse where the four 5000-kva, 2300-v units were installed and on which ground detectors had been installed on May 2, 1938. This alarm was found to be caused by the No. 1 Generator. The ground detector indicated 10 to 44 per cent phase-to-ground faults, lasting from a few seconds to four minutes. It was not convenient to take this generator off the line until November 26, 1939. The generator was given high-potential tests and one coil near the upper half of the machine failed. It was found that a broken lamination finger had cut the insulation.

On December 9, 1939, this generator again indicated a 10 to 20 per cent continuous ground. The machine was taken off the line and immediately given high potential tests. A phase "A" coil broke down to ground on this test. The cause was the same as was found on November 26. Again it is believed the ground detector furnished information that pre

vented more serious damage to this machine.

By 1940, all generator neutrals had been lifted, and during that year the remaining fourteen synchronous-condenser neutrals were lifted and ground detectors installed.

The first case of generator trouble in 1940 occurred July 15. A 17,500-kva, 6600-v generator which had been operating with an ungrounded neutral since May, 1939, failed, presumably due to shorted turns, since considerable damage was done to the winding and other equipment in the pit below the generator, including the current transformers which were badly damaged and burned. The ground detector indicated a target, but no one knew when the ground alarm came in because the first indication of trouble was when the operator heard the noise caused by the generator failure. This generator had been installed in 1913, and still had the original windings which were badly oil soaked. After a thorough investigation it was felt that the ungrounded method of operation was in no way responsible for the trouble.

On August 13, 1940, a 15 per cent ground was indicated on a 17,500-kva, 6600-v generator. This generator had been operating with ungrounded neutral since May, 1939. The generator was taken off manually and the ground was located in one of two cables on the "C" phase. The bad cable was disconnected, and the generator carried a reduced load until a new cable could be installed.

Differential relay operation occurred on a 30,000-kva, 6600-v condenser in December, 1940. The neutral had been ungrounded since June, 1940. When putting this condenser on the line and changing from the starting to the running position, the condenser relayed. A ground alarm was indicated. Investigation disclosed two armature coils had burned open on the end turns near the lamination. There was no reason to believe that the ungrounded neutral had contributed to this failure.

Operating Records, 1941

Three ground detectors were added to the remaining frequency changers during 1941, and from that year on, all synchronous machines on the Southern California Edison Company System have been operating with ungrounded neutrals and ground detectors. A 45,000-kva, 11,500-v generator which had been operating with ungrounded neutral since July, 1938, developed an 86 per cent ground on April 13, 1941. A phase "A" armature coil was found grounded. The one coil was repaired and the generator returned to service six days later. There was no indication of the slightest damage to the iron.

On April 19, 1941, a 25,000-kva, 11,500-v generator having full differential protection had to be taken off the line manually. It had been operating ungrounded since March, 1939. An open section in the field had burned a 12-in. anchor bolt which became lodged between the field and stator, causing damage to four armature coils. No iron was damaged by the winding failure.

On August 6, 1941, a momentary ground alarm was indicated on the generator which had been involved in the case of trouble caused by the lizard in September, 1938. Since the ground had immediately cleared, no action was taken, however, a few hours later a dead cat was found under the generator bus, one hind foot had been burned. It was believed that the lifting of the neutral at this station proved its worth, judging from the previous experiences on a similar case of trouble.

A ground alarm was indicated on a 50,000-kva, 13,200-v synchronous condenser in October, 1941. The neutral of this machine had been lifted in July of 1940. Tests disclosed that a "C" phase secondary lead was burned open on the transformer tap changer.

Operating Records, 1942

There were six recorded cases of ground detector operation during the year 1942. A 28,500-kva, 11,500-v generator which had been operating with ungrounded neutral since June, 1935, relayed on differential protection. Investigation disclosed that two phases had shorted to ground at the phase rings while the other phase went to ground near the top of the stator. The trouble had been caused by excessive generator voltage. A very small section of iron was pitted and a few coils close to the faulted section looked black and dirty. These coils were disconnected and were given an insulation test at 150 per cent of rated line voltage.

Two coils broke down during the 150 per cent voltage test. The results of these tests indicated that insulation was badly deteriorated and would result in unreliable operation if repaired. It was decided to completely rewind this generator with the available spare coils and some of the old coils reinsulated.

This case of trouble indicated that ground detection will not prevent faults on windings that are generally deteriorated when a real case of high voltage develops. However, it is felt that the ground detector method of operation saved severe damage to the iron in this case of trouble.

A ground alarm was recorded on a 30,000-kva, 6600-v synchronous condenser on July 17, 1942, but no trouble developed.

On September 17, 1942, a 17,500-kva, 6600-v generator was taken off the line due to 95 per cent ground indication. The neutral had been lifted on this machine in April, 1935. The insulation had failed on one phase of the 6600-v generator differential current transformer. Repairs were made in three hours and the generator returned to service.

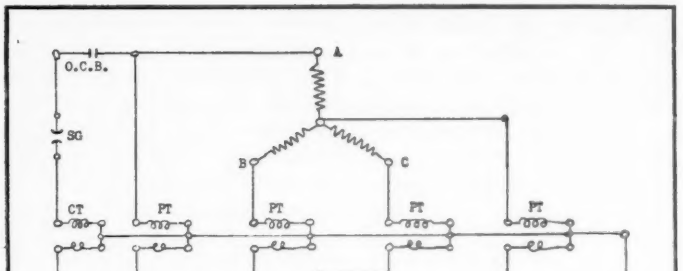
Sparrow Grounds 6.6 Kv Bus

On October 14, 1942, the same ground detector that had given momentary alarm on June 17, 1942, was again operated. It was found that a sparrow had grounded the 6600-v bus while standing on the bus support insulator. No damage to the equipment resulted.

On October 20, 1942, a ground alarm was indicated on a 28,500-kva, 11,500-v generator, but it did not stay on long enough to obtain a reading. This detector had been in service since June, 1935. This generator is one of two connected to one bank of transformers. While switching to clear one generator, a disconnect blade support insulator broke and the blades dropped down on top of the front bus barrier which was non-conducting. In falling, the blades momentarily touched the steel facing on a side barrier causing a momentary ground fault. There was no damage but there is no doubt that had these generators been solidly grounded, damage would have resulted and more than likely personal injury would have occurred, since two operators were observing the disconnect as it was being operated.

On November 6, 1942, a ground alarm was received on a 30,000-kva, 6600-v condenser. Investigation disclosed that a bird had contacted the center phase 6600-v bus and the angle iron supporting the bus. No damage to equipment resulted.

Since 1942, many indications of



SCHEMATIC DIAGRAM OF CONNECTIONS FOR TEST
17,500 KVA., 6,600 VOLT GENERATOR

Generator operated at 60 cycle speed. Voltage built up by manual control of field.

SP - Spark Gap
CT - Current Transformer - 10 to 5 Ratio
PT - Potential Transformer - 6600 to 110 Ratio
OO - Oscillograph Element - Miller
OS - Oscilloscope Element - Dumont 208-B

Schematic Diagram of Connections for Testing 17,500-Kva, 6600-V Generator

grounds have been indicated and investigation has shown no damage of any consequence.

The possibility that arcing grounds would cause transient high voltages in a machine winding has caused some reluctance to operate machines with ungrounded neutrals. Early in 1949, a 17,500-kva, 6600-v generator was to be rewound for change of voltage. This furnished an opportunity to obtain data for studying the behavior of machine voltage while arcing grounds were present.

Connections were made as shown in Fig. 2. Potential transformers were placed in each phase to measure voltages to ground. The voltages were recorded on a multi-element oscillograph, and on a cathode-ray oscilloscope connected in the "C" Phase. A high-speed camera was used to photograph the trace of the "C" Phase voltage. Phase "A" was connected to ground through an oil circuit breaker, a spark gap, and the primary of a current transformer. One element of the oscillograph was used to record the current to ground along with the Phase "B," Phase "C," and neutral to ground voltages.

The generator was run at 450 rpm to give 60-cycle frequency. Voltage was controlled by manual operation of the field rheostat. In some tests the gap was caused to break down by gradually increasing the voltage. In other tests the voltage was adjusted to a predetermined value with the oil circuit breaker open. Breakdown was then caused by closing the breaker. The results showed that the conditions after breakdown were not affected by the method used to start the gap arcing.

Tests were made with the "A" Phase arcing to ground through air and with the arc passing through punctured insulation. Three tests were made for each case, first with the machine grounded through the primary of a 6600 to 110-v potential transformer, as is the normal practice of the Southern California Edison Company, then with the generator neutral grounded through a 15-kva 7200 to 220-v distribution transformer loaded on the secondary with a resis-

TABLE I—RECORD OF OPERATION WITH UNGROUNDED NEUTRAL—SOUTHERN CALIFORNIA EDISON COMPANY

Unit			Date	Time	Nature of Ground	Cause	Outage	Repairs
S-2	85,000 Kva.	13.8-Kv.	8- 9-46	7:58 a.m.	Momentary	Water Dripping on Leads	None	Plastic Filler
	85,000 Kva.	13.8-Kv.	8- 9-46	8:03 a.m.	Momentary	Water Dripping on Leads	None	Plastic Filler
No. 1	15,000 Kva.	11-Kv.	4-28-47	7:33 p.m. to 8:30 p.m.	Continuous	Break in Cable at Pothead "A" Phase	8:30 p.m. on 4/28 to 6:55 a.m. on 4/29	Replaced 25 Feet of Cable.
No.11	100,000 Kva.	16.5-Kv.	6-17-47 6-18-47 6-19-47 6-20-47	9:30 p.m. 9:20 p.m. 3:37 a.m. 2:44 a.m.	Several Momentary	Leaking Air Coolers, Water Spray	None	Plugged leaking tube.
No.11	100,000 Kva.	16.5-Kv.	6-23-47	9:29 p.m. 10:23 p.m. 10:43 p.m.	Momentary	Dirty wall bushing in 16.5-kv. Breaker house.	11:11 p.m. to 2:45 a.m.	Cleaned Insulators.
No. 9	55,555 Kva.	11-Kv.	10-10-47	9:33 p.m. to 10:02 p.m.	Momentary & Arcing on 11-kv. bushing on "A" phase of transformer bank.	Fog and dirty Insulators	None	Cleaned Insulators.
No.9	55,555 Kva.	11-Kv.	12- 1-47	9:03 a.m. 9:35 a.m.	Momentary	Water dripping on wall bushing near transformer.	None	None
No.3	25,000 Kva.	11-Kv.	1-12-48	6:30 a.m.	One hundred percent ground	Old cable patches broke down on "A" phase leads.	6:31 a.m. to 3:27 p.m. 8:05 a.m. 1/16 to 3:43 p.m.	Cut out a parallel cable. New cable.
No.11	100,000 Kva.	16.5-Kv.	3- 9-48	4:35 a.m. to 5:07 a.m.	Momentary	Generator air cooler leaking.	None	Plugged tubes.
No.11	100,000 Kva.	16.5-Kv.	3-17-48	1:00 p.m.	Several momentary grounds	Moisture on 16.5-kv. roof bush.	None	No Repairs.
No.11	100,000 Kva.	16.5-Kv.	11-19-48	11:15 a.m.	Momentary	Leaking fuse on "A" phase metering P.T.	None	Replaced in service.
No.11	100,000 Kva.	16.5-Kv.	11-22-48	1:20 p.m.	Momentary	Unknown	None	None
No.11	100,000 Kva.	16.5-Kv.	11-29-48	6:30 a.m.	Momentary	Ground relay trouble 50 to 60 cy.	None	Replaced Relay coil.
					HUNTINGTON STEAM PLANT			
No. 2	60,000 Kva.	13.8-Kv.	12-16-48	10:38 p.m.	Momentary	Dirty Insulator	None	Unit off to wash insulators in transformer vault on 12-21-48.

tance of 1.3 ohms, and finally with the generator neutral completely ungrounded.

The results of these tests shown by oscillographs indicated that no serious high voltages resulted from the arcing grounds. However, oscillations did take place in some cases.

Since 1942, all synchronous equipment has been operated with elevated neutrals and equipped with ground detectors. Although many alarms have been indicated and recorded by the Dispatchers, no compilation has been made because no damage to equipment has occurred.

However, to give an indication of the continued success in this method of operation, a few cases taken from the Steam Generation Division are recorded in Table I.

Many of the recent installations on both condensers and generators have been grounded by using a resistance load connected to the secondary of a distribution transformer. The transformer kva has been approximately equal to the capacitive fault kva of the machine and the kilowatts dissipated in the resistor about one to two times the capacitive fault kva. It is contemplated to use a resistor connected in shunt with the primary of a potential transformer on the next generator ground detector installation.

The installations using resistors have been tried for experimental reasons only, and to date there is no evidence that resistor loading is needed. It has been stated in engineering literature that proportioning of resistance loading on circuits of this kind will in general avoid the so-called ferro-resonance possibility with an unshunted transformer and, also, will prevent high transient overvoltages in case of arcing faults or switching, and will swamp any harmonics present in the potential indication.

From the results of tests described in this paper, no high transient over-voltages are present during arcing faults and harmonics have never been a problem. From the oscillograms it appears that more distress occurs during arcing grounds when the resistor loading is used. However, no conclusions have been reached regarding which method is better, but from operating experience, we are convinced that the neutrals of synchronous machines connected as they are on the Southern California Edison System should be ungrounded and ground detectors installed.

Sporn Heads Advisory Committee on Cooperation Between the Electric Power Industry and the AEC

THE U. S. Atomic Energy Commission has announced the establishment of a three-man temporary Advisory Committee to recommend ways to establish continuing cooperation between the electric power industry and the AEC.

It is expected that the Committee will study the Commission's reactor program with a view to identifying areas or potential areas of mutual interest to the electric power industry and the Commission and make recommendations for bringing about a continuing program of cooperation in these areas.

Members of the Committee are Messrs. Philip Sporn, Chairman, Edward W. Morehouse and Walton Seymour.

Mr. Sporn, is President of the American Gas and Electric Co. and the American Gas and Electric Service Corporation. Mr. Morehouse is Vice President of the General Public Utilities Corporation in New York. Mr. Seymour, is Director of the Division of Power in the Secretary's Office, U. S. Department of the Interior.

In commenting on the establishment of the new committee, Chairman David E. Lilienthal of the AEC said: "While we have long recognized the importance of closer cooperation with those industrial interests not under contract to the Commission, the need was highlighted in last winter's report by an Industrial Advisory Group headed by James W. Parker (President, The Detroit Edison Company). We have given a great deal of thought to this problem and now feel it is time to explore more intensively the ways and means by which closer cooperation between the Commission and the electric power industry can be achieved."

Members of the new committee, who have been cleared for access to whatever data in the reactor field they may need to carry out the project, will conduct a first-hand examination of programs and technical information in the AEC's reactor development program. It is expected that the survey will be completed and recommendations submitted by March 31, 1950.

25th Year of Film Program Celebrated by Public Service Corp. of N. J.

A PIONEER in the use of motion pictures for informing employees and customers of various aspects of its service, the Public Service Corporation of New Jersey has produced five major films and numerous miscellaneous pictures on specialized subjects since the summer of 1924, when its first film was produced. Over one million people have viewed one or more of the films, during that period, at some 8,211 showings.

The first motion picture presented by Public Service was entitled "New Jersey and Public Service."

The reception of this film by the press and by the audiences assured an active continuance in this field by the company. The *South Orange Record* said it was "unquestionably the finest industrial film ever taken in this State, if not the very best taken anywhere." This quote typifies the press' reaction to the embryonic venture that was soon to grow into a varied, well-formed program.

As a result of the increased demand for showings, members of the Campaign Manager's Office (now Sales Promotion Manager), were trained to operate, introduce and lecture at these showings. The first film, and the second, "The Public Servant of a Great State," were silent films and it was necessary to lecture during the presentation. Today, all pictures are sound and many are in full color.

Films are currently available for public showings. These presentations covering many phases of lighting, electricity, adequate wiring, cooking, etc., plus entertainment shorts such as comedy and sports, are obtainable by any organization in the company's territory as a forty-five minute program. An expert operator and all equipment is supplied without charge. All that is required of the organization is to provide an audience and a suitable place for presentation.

Emergency Storm Training Pays Off For Florida Power & Light Co.

"PLAN Ahead — Have Everything Ready"—was the keynote of the Florida Power & Light Company's emergency organization procedure that went into effect when the late August hurricane struck a major portion of the area served by the company. As a result of this training, rapid recovery in electric service was accomplished.

$40 Million Estimated Damage

The two-day hurricane, causing estimated damage in the state of over $40,000,000, was of such force and covered such a wide area that the company's transmission network sustained heavy damage in addition to the damage to local distribution systems. Full force of the blow was felt along a 20-mile front, with damage over the storm's entire path extending from Miami to the Georgia line.

Employees who already had received on-the-job-training in special hurricane procedure were provided a special review of the plan in the employee publication, "Sunshine Service News." The article stressing company policy of "Looking Ahead," appeared on August 15. The hurricane—called by some old-timers the worst since 1926—struck August 26 and 27.

Special Hurricane Manual Prepared

A special hurricane procedure manual for company personnel instruction—outlining duties and methods of assembling materials—was prepared ahead of time.

In accordance with the training program and procedure set up in the hurricane manual, the emergency plan automatically went into effect before the storm struck. U. S. Weather Bureau reports on the approaching storm were the signal for hundreds of employees to report to special storm assignments.

Some returned from vacations in other states by fastest transportation—by air where necessary. The regular force was augmented by dozens of "borrowed" linemen flown in with tools and equipment from Mississippi, Arkansas, Tennessee, Georgia, North and South Carolina.

In addition, voluntary offers of men and equipment for repair work were received from electric utilities as far north as Pennsylvania—a good example of how the industry stands by to help a company in an emergency.

An important segment of the company's emergency organization is a large group of commercial men who made certain that essential services, such as hospitals, water plants and the like, were restored promptly. They also established contact with the company's other customers: received their inquiries, provided factual answers, and endeavored to help customers in any way possible.

As the storm approached, tools, materials, trucks, and other equipment were readied by some employees. Others were prepared to survey damage once winds abated, thus enabling immediate dispatch of the line crews and repairmen.

165 MPH Winds

Winds, reported as high as 165 miles per hour, lashed at Florida's east coast August 26 and 27, dealing heavy blows all the way from Miami northward. However, by 3 a.m. on the 27th, 200 skilled repairmen and 40 trucks, over and above the regular forces, equipped with power saws and other road-clearing machinery, were assembled in convoy. They started pushing their way through the stricken area still lashed by the tail of the storm. Working their way through wind, rain and darkness, they were the first to reach many communities.

To speed construction of damaged transmission lines, the company acquired from building industries large caterpillar tractors with 20 and 30-foot booms to help erect new transmission structures.

Mobile Power Units Used

The company had on hand a number of mobile power units to provide service for hospitals, the pumping of municipal water tanks and other essential service for isolated communities. Some were connected as the storm approached, others were dispatched when abating winds permitted.

The company's FM radio communication system was employed to handle emergency messages, and its airplane for patrolling transmission lines and in speeding dispatching of repair crews.

As an example of how the company kept customers informed on post-storm service, the following handbill entitled, "Important Message to Electric Users in Stuart from the Florida Power & Light Company," was distributed in Stuart, Florida, Tuesday, August 30.

"Important Message"

"The Florida Power and Light Company, like other folks in this territory, has suffered a tremendous loss. We are just as sorry as you that the severe hurricane disrupted your electric service.

"We want you to know that everything humanly possible is being done and not one dollar of expense is being spared to get our lines back promptly. I know many of you expected it would be several weeks before you would get your electric service.

"You will be pleased to learn that by tonight [Tuesday, August 30]—only four days after most of our lines were strewn throughout the streets, electric service will be available throughout the town. This has been made possible by our company installing here in Stuart, emergency power units which can furnish electric service on a limited basis until the transmission lines can be restored.

Portable Substation Restores Service

"The river crossing carrying our transmission lines to Stuart was completely destroyed. It may be a week or two before the crossing can be rebuilt. However, in the meantime, a temporary cable is being thrown across the river with a portable substation on the other side of the river which when completed, will give Stuart full and complete service.

"This may take another three or four days and we regret that until then it is necessary for us to ask you to please:

1. Refrain from using your water heater.
2. Reduce electric lighting to a minimum.
3. Discontinue the use of any motors that are not absolutely necessary in your home or business.

"You folks have been splendid by cooperating in these trying times. Thank you most sincerely," signed, John M. Law, manager, Florida Power and Light Company.

In addition, radio sound trucks were used to suggest that customers limit their use so available electricity might be shared by more people.

Health Aspects of Air Pollution

By A. J. Lanza, M.D.

Chairman, Institute of Industrial Medicine, New York University—Bellevue Medical Center, and Chairman, Council of Industrial Health, American Medical Association

A paper presented before the 42nd Annual Conference of the Smoke Prevention Association of America, Birmingham, Ala., May 24, 1949

IN this discussion of air pollution it is first necessary to define what it is we are to discuss, and I assume that we are here concerned with the general atmosphere of communities.

In factories, workshops, mines and all other places where men are gainfully employed air pollution occurs, but it is possible to control such pollution and in fact control the air itself by washing or cleansing it and regulation of its temperature, humidity and movement. These modifying controls are used not only to remove deleterious substances but to increase comfort and working efficiency.

Four Harmful Substances In Air

In the main, the harmful substances that may be present as a result of industrial processes are known and the amount of such substances in the air can be readily determined. In fact, our knowledge has progressed to the point where we have been able to establish standards, expressed in terms of maximum allowable concentrations, for the protection of industrial workers. Steady progress is being made in the atmospheric control of working places and for a variety of industrial processes it is essential to provide complete control to carry on the work properly.

All this is well known and is mentioned here for the purpose of contrast with the specific problem under consideration.

Let us ask ourselves what is pure air and where is it found. Presumably pure air is air containing only its chemical components in proper proportion and free from any air-borne foreign substances whatever. Where does one find pure air—possibly on mountain tops and in mid ocean.

Wherever man goes or congregates he pollutes the air, first of all by the process of breathing and secondly by his habits and customs. For one thing, he draws an enormous amount of tobacco smoke into his lungs and respiratory passages which he thereafter exhales for the benefit of his fellow man. He moves around in millions of motor cars which, in their mass effect, contribute more to the pollution of the atmosphere, particularly at the breathing level, than do the factory stacks.

These facts are not presented in any way as an extenuation of the air pollution problem, but merely to point out that there are definite aspects of the problem which must be kept in mind if we are to introduce a leaven of common sense into our discussions.

For one thing nature has constructed the breathing apparatus of man so that it is a fairly effective filter of extraneous matter that may be suspended in the air. For centuries before the industrial era, man breathed air contaminated by foreign particles arising from the surface of the earth and stirred up by wind and by agricultural pursuits and by the processes of nature, such as pollinization of trees and flowers. Man has been contending with air pollution ever since he left the garden of Eden. He has survived, not only because of his own defensive mechanism but because the movement of air has diluted his various exposures to air-borne substances sufficiently to render them harmless, or at least tolerable.

New Problems

What faces us now is that, on account of the enormous expansion of industry, and our methods of heating homes and office buildings, we are in many instances faced with the realization that we cannot continue to rely entirely on the benign effects of nature to protect us. At the same time we should endeavor to understand our problem as clearly as possible so that we do not become the victim of needless fears and worries.

In industry most occupational diseases are air-borne. As examples we can mention such poisonous substances as lead and mercury as representing the metallic group, benzol as representing the solvents and carbon monoxide and sulphur dioxide the lethal gases. The action of these substances may produce an acute illness and in contrast we have silica, causing silicosis, essentially a chronic illness of long duration. So, likewise, we may consider deleterious substances in the general atmosphere as a possible cause of acute or chronic illness.

The common industrial poisons do not affect the general population as a result of atmospheric pollution. In spite of automobiles there does not seem to be a hazard of carbon monoxide poisoning in the general atmosphere and when cases of illness from toxic substances do occur, usually they result from intimate contact in the home.

Nature Played Us False

On rare occasions mother nature has played us false, and we have had the chain of circumstances that contributed such episodes as Donora, and the series of fatalities in the Meuse Valley in Belgium in 1930. Of lesser degree are the episodes of smog with eye irritation in Los Angeles and some similar events in other parts of the country.

I think we can agree that pollution of the atmosphere by fumes and gases of industrial origin sometimes may give rise to a serious situation; also that from time to time it can cause serious annoyance to large groups of people, and also that where it does not cause direct ill effects, such as irritation of the eyes or upper respiratory system, it frequently does have a considerable nuisance value.

Such nuisances are a real detriment to any community and are a challenge to all who are concerned with control measures, either as private individuals or as official governmental agencies. It is not the purpose of this discussion to describe what measures should be taken but control is more and more a matter of concern to all of us. It is the right of everyone to be free from discomfort or nuisance either in his home environment or in the locality in which he may make his living.

The amount of disability and mortal-

ity from these causes is exceedingly small, so small that it could not be identified in any statistical tabulation of the causes of death or disability. It is not true that the air of our communities contains lethal or disabling amounts of a large variety of toxic substances poured out upon a defenseless community by the neighboring industries. Our communities may be death traps, but not from atmospheric pollution—I refer to the Monday morning chronicle of traffic deaths and injuries following any pleasant week-end.

Scarehead Pronouncements

We are justified in making a plea for a considered and intelligent viewpoint in the matter of atmospheric pollution. Not only do fallacious and scarehead pronouncements by irresponsible persons do no good—they may do more harm to the comfort and well-being of communities than the ills they pretend to discuss.

For the most part, the visible agent in atmospheric pollution is smoke which consists mainly of carbon and other combustion products. Smoke may be a nuisance, a very considerable nuisance and is being so recognized to an increasing extent. Here again, without in any way minimizing the nuisance value of smoke to general comfort and well-being, smoke pollution has just become the occasion of a great deal of loose and injudicious statements.

Just recently I saw a bulky memorandum which was presented to the mayor of a large city some months ago. The purpose of the memorandum was to substantiate the claim that smoke was a substantial cause of cancer of the lungs. A large portion of this report consisted of statistical information so I suggested that it be sent to Dr. Louis I. Dublin* whose eminence in the statistical and health field is recognized everywhere. I quote from Dr. Dublin's letter of reply with his permission.

"The memorandum submitted with your letter of March 7 is just another example of the misuse of statistics for propaganda purposes. Atmospheric pollution may or many not be a cause of cancer of the respiratory organs. At the present time our knowledge of the subject is mostly conjectural. We have no authoritative statistics that would indicate an affirmative conclusion. I have not had the time to check the figures presented, the source of which, I note, has not been given. But assuming that the data are reasonably accurate, they still cannot be interpreted as indicating a close connection between atmospheric pollution and respiratory cancer. As a matter of fact, the writer has not attempted to establish correlation between the two phenomena. He merely states that since cancer of the lung has been increasing it must be due to atmospheric pollution. We could, with equal facility, point to dozens of other conditions and draw the same conclusion although common sense would tell us that there could not possibly be any direct connection.

"It is true that the crude death rate from cancer of the respiratory organs, especially cancer of the lung, has been increasing in recent years. This trend has not been confined to places with smoky atmospheres; it has occurred in all sections of the country. Moreover, this trend has been much more rapid among males than among females. One would expect that if the increase were caused by impurities in the atmosphere, it would affect both sexes equally.

"The most likely explanation lies in the fact that the number of persons in the age groups in which cancer is most prevalent, has been increasing in recent years and consequently more cancer deaths are being reported. Furthermore, facilities for the diagnosis of cancer are so much better today than formerly that many more cases are being discovered than was possible a decade ago. Since these diagnostic facilities are much more available in our large cities than in the rural regions, it is not surprising that a larger number of deaths are being ascribed to cancer of the lung in cities than are reported in the country.

"I agree with you that excerpts from articles without the full text should be accepted with caution. In the present instance there seems special reason for viewing such abstracts with suspicion. I have not attempted to look up more than a few of the various references quoted by the writer but what few I have consulted leave a very bad impression of his methods. The following is an example which is especially discreditable.

"He cites Dorn, ('The Incidence and Prevalence of Cancer of the Lung') as follows: 'If it were true that soot and other flue products resulting from the burning of coal, when continuously present in the atmosphere, increased the incidence of lung tumors in the populations, it should be possible to detect this fact by collecting information concerning the number of persons with respiratory cancer in cities with varying degrees of atmospheric pollution.' But he neglects to present the following table together with Dorn's accompanying remarks.

NUMBER OF NEW CASES OF CANCER PER 100,000 WHITE POPULATION PER YEAR WITH PRIMARY LOCATION IN THE LUNGS AND THE RESPIRATORY SYSTEM BY SEX FOR SELECTED CITIES*

City	Lung		Total Respiratory	
	Male	Female	Male	Female
Philadelphia	14.8	3.1	25.1	4.4
Alameda and San Francisco	11.5	3.1	19.1	4.3
Chicago	10.2	3.0	18.1	4.0
Detroit	11.1	2.4	15.9	3.3
Pittsburgh	8.7	2.9	14.9	4.0
Denver	7.4	4.0	12.4	5.3

* Standardized for age using the total urban population of the United States, 1940. Data collected by the United States Public Health Service.

"(Dorn:) 'Although exact measures of the air pollution are not available, it is generally thought that, of the cities listed in Table 4, the greatest amount of pollution is in Pittsburgh. However, the incidence rate for lung and respiratory cancer in males is lower in Pittsburgh than in any of the other cities except Denver. There is less difference in the rate of the surveyed cities.'

Data Do Not Prove Case

" 'These data do not necessarily prove that atmospheric pollution has no effect upon the incidence of respiratory cancer. On the other hand, they offer no affirmative evidence that such is the case. The causes of respiratory cancer are probably too complicated to be discovered in this relatively crude manner.'

"By this time you will have gathered that I do not have much regard either for the writer's reasoning or his methods of approach. To my mind he has not only failed to establish his thesis but also has failed to present a paper worth

(*Continued on page* 343)

* Second vice-president and statistician of the Metropolitan Life Insurance Company.

Accomplishments of the Electric Light and Power Industry in the Reduction of Atmospheric Pollution

By A. L. Penniman, Jr., and E. F. Wolf
Consolidated Gas Electric Light and Power Company of Baltimore

An address presented at a meeting of the Smoke Prevention Association of America, Birmingham, Ala., May 24, 1949

WE welcome this opportunity of presenting to the Smoke Prevention Association of America some of the accomplishments of the electric light and power industry in the reduction of atmospheric pollution. Your Program Committee requested a paper for this meeting "covering the utilities' viewpoint regarding smoke and fly ash elimination, including such efforts as they are making to comply with the various ordinances, the handicaps imposed upon them, and any other factors that would be pertinent to the subject."

In discussing this many-sided civic, economic and engineering problem, we are not presuming to represent the electric power industry. It is obviously impossible for any one person or small group of persons to speak for this industry which consists of a large number of independent companies. As these individual companies are subject to regulation by each State in which they do business, no trade association can establish uniform policies for the industry. Therefore, this paper only sets forth the opinions and best judgment of its authors. However, these opinions are based on an extensive association with national engineering, technical and civic organizations, and on the record of actual facts. The figures showing what has actually been accomplished, define the attitude of the power industry better than any statement which we could make.

Electric Light and Power Industry Record

It is difficult for us to discuss this subject because we do not want to boast. However, we believe that we owe it to ourselves as well as to those responsible for law enforcement to tell you of the very real efforts and the large expenditures our industry has made to solve this problem. The electric light and power industry has taken a leading part in the reduction of atmospheric pollution. It has done more than any other industry, and probably as much as all other industries combined, to reduce smoke and cinder emission from stacks.

The first major contribution of the electric light and power industry toward the reduction of atmospheric pollution was the replacement of great numbers of individual power plants by the construction of efficient central power generating stations. This has removed some of the worst sources of objectionable black, tarry smoke in many communities, for these small plants were often improperly built and poorly operated. The second major contribution of the utility industry was the equipping of many of its own power generating stations with modern high-efficiency boilers fitted with effective dust collectors.

A Civic Responsibility

Our industry is fully conscious of the atmospheric pollution problem and of our civic responsibility. We must sell our services in our own communities. The neighbors of our power plants are our customers. The growth of our business depends on growth of population and on increased use of electricity. We fully realize that freedom from excessive atmospheric pollution has a direct bearing on the prosperity and growth of any community, and, consequently, on the increased use of our services.

It is fundamental that wherever fuel is burned there will be some nuisance. Total elimination of all dust is impossible. For this reason, power plants have been located away from centers of population whenever it has been practical to do so. Unfortunately, the power requirements of metropolitan areas generally require nearby plants. The availability of condensing water, and of facilities for transporting coal as well as the ability to get the electric power out of the plant, places definite limitations on, and, in many instances, narrowly defines the possible sites.

In recent years, it has become almost the universal practice of the electric utility industry to equip new plants, where coal is burned, with high-efficiency dust collectors.

We have obtained specific data from twenty of the larger utility companies. These companies have already spent well over thirty million dollars to equip coal burning boilers with dust collectors and they contemplate the expenditure of another thirty million dollars to equip existing plants as well as those to be built in the near future. This investment of over sixty million dollars by only a part of our industry for the reduction of atmospheric pollution indicates the attitude of the electric light and power companies.

The power companies from whom we obtained data now have in operation boilers burning pulverized fuel with a total capacity of approximately 106 million pounds of steam per hour. This represents a very significant part of the total steam production capacity of such boilers in the country. Ninety-four per cent of all of these boilers, which include those in rural areas as well as in cities, are equipped with some type of flue dust collector. Approximately 80 per cent have modern type collectors with rated efficiencies of 85 to 97 per cent. This represents a very great step forward on the part of the electric power companies toward elimination of atmospheric pollution.

Private Power Co.'s Own 80% of Dust-Collecting Equipment

Although the privately-owned, tax-paying utilities burn less than 20 per cent of the coal consumed in this country, our industry owns more than 80 per cent of all the modern dust and cinder collecting equipment installed on coal-burning boilers.

The very great cost of meeting the high standards of fly ash and cinder removal required by certain ordinances

has not been fully recognized. In fact, the actual dust collecting equipment cost, which in itself is very large, is only a fraction of the total cost. The additional fan power, structural supports and foundations often cost much more than the dust collecting equipment itself. To obtain the highest practical removal of both coarse and fine particles, a number of utilities located in densely populated areas have installed combination collectors consisting of mechanical and electrostatic units in series.

The present-day cost of providing such a series dust collector for a 60,000-kw generating unit, a size frequently installed at the present time, may be a half million dollars or more. At this time may we respectfully suggest that unduly exacting requirements in smoke ordinances probably retard rather than aid in the accomplishment of their purposes.

Only in recent years have high-efficiency dust and cinder collectors suitable for power plant installations been available. Dust collectors have been used for a number of years, but sufficient knowledge to design this equipment with predictable performance has been available for only a relatively short time. The effect of gas velocity, uniformity of gas distribution, dust loading, composition of coal ash, and many other factors is just becoming reasonably well understood.

Development and Research

The equipment manufacturers are doing an excellent job of developing more efficient dust collectors and of solving the many practical problems of adapting their equipment to the exacting demands of modern power plants. One of the real handicaps in developing any complicated industrial art is the large expenditure of money which must be recouped by the manufacturers to pay for research and development work. Our industry has paid much more than its share of these development costs, for which we believe we should be given credit.

Electric light and power companies have also done a great deal of costly research work themselves and have contributed in great measure to the development of dust collectors. In addition, a number of companies have made basic contributions in other approaches to the stack emission problem. A number of utilities have financed extensive and expensive wind tunnel investigations of chimney performances. By this means new plants have been designed and existing plants have been modified so as to improve the dispersion of the discharged stack gases. These tests have also led to the design of stacks with higher gas exit velocities. High velocities improve gas dispersion but materially increase fan power costs.

Moreover, much time and money have been spent by power company engineers in investigating the flow of dust-laden gas in collectors and re-entrainment of dust already removed from the gas stream. We believe, also, that it is a fair statement that the use of electrostatic and mechanical collectors in series for the more effective removal of dust from boiler flue gases was largely a development of those of our industry having plants located in densely populated areas.

"Cyclone" Furnaces

One utility company has spent and is spending very large sums of money as its part in the development of the "cyclone" furnace in which most of the coal ash is collected as molten slag and relatively little dust leaves the furnace in the flue gases. This is, in our opinion, the most far-reaching development in the burning of coal that has taken place in the last quarter of a century.

When most of the present stoker-fired boiler plants were built, collector equipment to meet rigid smoke ordinances had not been developed. In fact, equipment which will even approach the requirements of some of the proposed ordinances has come on the market only recently. As far as these older plants are concerned, two factors work against the installation of dust collectors. Where no provision was made in the original plant design, it is frequently a physical impossibility to install collecting equipment except at prohibitive cost. This is particularly the case in congested city locations where it is impossible to secure the additional space required. Even where space can be provided by making major structural changes it would be necessary to take much needed power generating equipment out of service for extended periods.

Furthermore, many of these old plants have served most of their useful life and generally operate only on peak loads. Certainly, it seems unreasonable to require the installation of expensive dust collecting equipment for a plant that has been in service for twenty to thirty years or even longer and that has already consumed 80 per cent or more of the coal it will burn during its entire existence. Also, do not overlook the fact that the money for dust elimination must in the end come out of the pockets of the consumers, that is, the public.

We cite the following example to illustrate the large cost and the problem involved in equipping an old plant. In the case of an electric utility with which we are familiar, it required comprehensive engineering studies over a period of a year and a half to develop a practical means of installing dust collecting equipment. To make possible the installation of this equipment, it was necessary to remove and replace two steel stacks and to reinforce the structural steel throughout the boiler house down to the foundation. The equipment which it was found possible to install was not the most effective, but it does have an overall efficiency of 87 per cent. Furthermore, to make these changes, it was necessary to take each boiler and its associated turbine-generator out of service for several months. It cost nearly three-quarters of a million dollars to install these collectors on two 450,000-lb-per-hr boilers which were already twenty years old. These boilers had burned three million tons of coal, and might reasonably be expected to burn only 750,000 tons more during their remaining life.

Fortunately in this isolated case the foundations were able to carry the additional loads imposed upon them. The boilers were already fitted with over-size induced-draft fans of sufficient capacity to furnish the additional draft required for the dust collectors. We know of other older plants where dust collectors just can not be installed.

Progress in equipping power plants with dust collectors was retarded by the war. During this critical period, the Government did not allocate materials for this purpose. In one case, a utility went so far as to wreck old tanks to get the necessary steel and to re-fabricate the plates on the job so as to make possible the installation of dust collectors in a plant under construction. This plant is located outside of city limits. There was no local smoke or dust ordinance but the utility went to this extreme measure as its contribution to the well-being of the community.

Stack Discharge Gases

In this discussion, we have dealt only with the smoke, fly ash and cinder problem. The subject of stack discharge gases in the atmosphere has come up at infrequent intervals and in widely scattered areas, generally as a result of some unusual local conditions. There is now no *commercial* solution to this problem

except to install high stacks so as to provide for the safe diffusion of the gases even under adverse atmospheric conditions. Individual power companies, in many instances, are studying this subject and are working toward acceptable methods of sulphur removal.

This work has not progressed to the point where definite conclusions may be drawn, but the investigations range from the removal of sulphur from the stack gases to the removal of sulphur from the coal, preferably at the mines. It is hoped that eventually a commercially satisfactory method may be developed to take a large part of the sulphur out of the coal and at the same time to reduce the ash content. This would help to solve both the dust and gas problems.

These facts are presented to your Association with the hope that you will appreciate the great extent to which our industry has gone to cooperate with you in your objectives. It is the practice of individual utility companies to cooperate closely with local smoke enforcement officials and we believe that such cooperation should be fostered.

When smoke officials approach public utility officials, they may expect to meet with friendly cooperation. We know that this attitude exists in our own company and in our city. In case any enforcement official hesitates to follow this practice, we suggest that he talk with Mr. Luke Ellis, Engineer of the Smoke Control Division of Baltimore City. He and his predecessors have done an excellent job. We have cooperated with one another and have worked together harmoniously and successfully.

The stacks of the electric power plants are frequently the most conspicuous in any community. In spite of the installation of efficient dust collectors, the public will probably continue to look upon these public utility stacks as the source of their atmospheric pollution. We believe that those of you who are responsible for guiding public opinion should do your part to correct this impression.

In closing, may we leave with you the thought that the electric power utilities have made and are continuing to make a real contribution toward the elimination of the smoke and fly ash nuisance.

Health Aspects of Air Pollution

(*Continued from page* 340)

of the serious consideration of those interested in the subject."

Some years ago there was considerable discussion as to whether smoke pollution was responsible in part for the mortality from pneumonia. From 1911 to 1913 the Mellon Institute conducted, in Pittsburgh, the first comprehensive study of the smoke problem in this country.

In 1912, Dr. Marcy and Dr. White reported that those districts of Pittsburgh which had the greatest soot fall also had the highest incidence of pneumonia. In 1923 and again in 1929 these observations were confirmed by Dr. Meller. In 1938, Dr. Hagthorn and Dr. Meller published a report (*Amer. J. of P.H.*, April, 1938): "The Necropsy Evidences on the Relation of Smoky Atmospheres to Pneumonia." They based their report on the post mortem examination of the lungs of 3000 persons dying from various diseases in Pittsburgh hospitals, including women, children and men variously employed in the professions and in industry.

This report was made before the advent of chemotherapy robbed pneumonia of most of its terrors, nevertheless it furnishes information applicable to our problems today. In their conclusions the authors stated that nothing tangible was found to connect the pigment deposits in the lungs examined with pneumonia incidence or mortality rates.

What may we conclude from the evidence so far available?

1. Industrial fumes and gases do not occur in the general atmosphere to an extent to cause disability or death, except in very unusual and rare instances.
2. Industrial fumes and gases may constitute a nuisance and even at times irritation and inflammation of eyes and upper air passages.
3. As we cannot control the weather, every possible means must be taken to guard against dangerous or annoying episodes.
4. Smoke pollution, aside from its economic aspects, is a nuisance. It can seriously interfere with general well-being and comfort. That it can cause specific disease or death to any considerable degree cannot be stated in the light of available evidence.
5. That every resource of engineering science and practice should be employed to provide an atmosphere free from annoying or dangerous impurities.

School Lighting Sound-Slide Film Released by Better Light Bureau

"EDUCATING In A Truer Light," a 22-minute Kodachrome sound-slide film that tells a dramatic story of the need for better lighting in schools, has been released by the Better Light-Better Sight Bureau.

Intended for showings to parent-teachers associations, civic and welfare organizations, school boards, school administrators and other groups, the film will be used by electric utilities, electrical leagues and others interested in promotion of Planned School Lighting.

Packed with full-color illustrations of classrooms, "before and after," modern lighting installations, and with case histories of school relighting projects, the film presents its theme in a simple, non-technical style. Emphasizing the importance of securing support from parents when planning school modernization programs, the film shows how, once parents are sufficiently informed of the facts, ways and means are invariably found to assist educators in making the necessary improvements in lighting.

"With very few exceptions, less than 5 per cent of classrooms in the average community enjoy seeing conditions planned according to recommendations of vision and lighting authorities," it was said by Ralph P. Wagner, Chairman of the Better Light-Better Sight Bureau. "With surveys showing that our 258,000 schools need seven times the light they now have for eye comfort and safety, our industry has a definite obligation to spread knowledge of the need for, and benefits of, modern school lighting."

"Educating In A Truer Light" is available from the Better Light-Better Sight Bureau, 420 Lexington Avenue, New York 17, N. Y., at $50 per set, which includes film and record. A 6-page booklet, which condenses the story told in the film, and which is intended for distribution to audiences after showings, is also available at $5 per 100 copies.

Personnel of E. E. I. Committees for 1949-1950

Appointments to the Edison Electric Institute Committees for the Administrative Year 1949-1950 have been announced by Elmer L. Lindseth, President of the Institute. Personnel of the Committees are listed on the following pages.

ACCOUNTING DIVISION

ACCOUNTING DIVISION EXECUTIVE COMMITTEE

Chairman, W. H. ZIMMER, The Cincinnati Gas & Electric Co., Cincinnati, Ohio.

Vice Chairman, R. H. SMITH, The Cleveland Electric Illuminating Co., Cleveland, Ohio.

N. J. AMBROSE, Stone & Webster Service Corp., New York, N. Y.

A. E. BAUHAN, Public Service Electric and Gas Co., Newark, N. J.

F. J. BISCHOFF, Westchester Lighting Co., Mount Vernon, N. Y.

G. J. BRETT, Niagara Hudson Power Corp., Syracuse, N. Y.

L. F. CHAMBERS, Northern States Power Co., Minneapolis, Minn.

A. S. CORSON, Philadelphia Electric Co., Philadelphia, Pa.

A. E. CRAIG, American Gas and Electric Service Corp., New York, N. Y.

R. B. CURRAN, The Hartford Electric Light Co., Hartford, Conn.

F. E. DRAPALIK, Union Electric Co. of Missouri, St. Louis, Mo.

C. E. EBLE, Consolidated Edison Co., of N. Y., Inc., New York, N. Y.

J. D. ELLIOTT, The Detroit Edison Co., Detroit, Mich.

H. C. FLECK, New York State Electric & Gas Corp., Ithaca, N. Y.

HARRY HANSON, New England Electric System, Boston, Mass.

H. B. HARDWICK, Consumers Power Co., Jackson, Mich.

R. P. KAESSHAEFER, The West Penn Electric Co. (Inc.), New York, N. Y.

H. S. KING, The Commonwealth & Southern Corp., New York, N. Y.

R. F. LINEHAN, Pioneer Service & Engineering Co., Chicago, Ill.

J. H. LOBBAN, The Detroit Edison Co., Detroit, Mich.

F. H. MARKLEY, Pennsylvania Power & Light Co., Allentown, Pa.

ALLAN G. MITCHELL, Philadelphia Electric Co., Philadelphia, Pa.

A. E. PENN, Consolidated Gas Electric Light and Power Co., Baltimore, Md.

C. E. PICHLER, Southern California Edison Co., Los Angeles, Calif.

H. H. SCAFF, Ebasco Services Inc., New York, N. Y.

A. H. SCHETTLER, Union Electric Co., of Missouri, St. Louis, Mo.

H. P. TAYLOR, Wisconsin Public Service Corp., Milwaukee, Wis.

C. J. TRUDEAU, Wisconsin Electric Power Co., Milwaukee, Wis.

R. B. TULPIN, Central Illinois Public Service Co., Springfield, Ill.

P. R. WILLIAMS, Virginia Electric and Power Co., Richmond, Va.

A. R. WOOD, The United Illuminating Co., New Haven, Conn.

W. C. YOUNG, Public Service Electric and Gas Co., Newark, N. J.

Guest

D. L. INWOOD, Montreal Engineering Co., Ltd., 244 St. James St West, Montreal 1, Canada.

APPLICATION OF ACCOUNTING PRINCIPLES COMMITTEE

Chairman, H. H. SCAFF, Ebasco Services Inc., New York, N. Y.

Vice Chairman, A. E. PENN, Consolidated Gas Electric Light and Power Co., Baltimore, Md.

R. P. KAESSHAEFER, The West Penn Electric Co. (Inc.), New York, N. Y.

H. S. KING, The Commonwealth & Southern Corp., New York, N. Y.

H. P. TAYLOR, Wisconsin Public Service Corp., Milwaukee, Wis.

W. H. SWINNEY, West Penn Power Co., Pittsburgh, Pa.

E. TODER, Consolidated Telegraph & Electrical Subway Co., New York, N. Y.

Guest

C. E. PACKMAN, 208 South LaSalle St., Chicago 4, Ill.

CUSTOMER ACTIVITIES COMMITTEE

Chairman, J. D. ELLIOTT, The Detroit Edison Co., Detroit, Mich.

Vice Chairman, R. B. McCROREY, Georgia Power Co., Atlanta, Ga.

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O. E. FLORA, Pennsylvania Power Co., New Castle, Pa.

J. T. FOWLER, JR., Alabama Power Co., Birmingham, Ala.

J. M. GASQUE, South Carolina Electric & Gas Co., Columbia, S. C.

A. E. GERLAUGH, The Dayton Power & Light Co., Dayton, Ohio.

S. C. GRANT, Philadelphia Electric Co., Ardmore, Pa.

J. D. GREEN, Philadelphia Electric Co., Chester, Pa.

C. L. HAVENER, Consolidated Edison Co. of N. Y., Inc., Brooklyn, N. Y.

J. R. HEERY, The United Illuminating Co., New Haven, Conn.

W. W. HALL, Ebasco Services Inc., New York, N. Y.

J. E. HEVRON, New Orleans Public Service Inc., New Orleans, La.

R. O. JACKSON, Gulf States Utilities Co., Beaumont, Tex.

HARRY JEFFS, Queens Borough Gas & Electric Co., Far Rockaway, L. I., N. Y.

W. A. KELLY, Consolidated Gas Electric Light and Power Co., Baltimore, Md.

J. L. KOSTENBAUDER, Luzerne County Gas and Electric Co., Kingston, Pa.

R. A. KRAUSS, The Cleveland Electric Illuminating Co., Cleveland, Ohio.

C. B. KULL, Central Illinois Public Service Co., Mattoon, Ill.

C. E. LEWIS, Kansas City Power & Light Co., Kansas City, Mo.

E. A. LONG, Pacific Gas and Electric Co., San Francisco, Calif.

E. H. LOTHER, Malden Electric Co., Malden, Mass.

H. MANN, Utah Power & Light Co., Salt Lake City, Utah.

H. F. MARTIN, Long Island Lighting Co., Mineola, N. Y.

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W. E. LOSIE, The Detroit Edison Co., Detroit, Mich.
C. T. MALLOY, Southern California Edison Co., Los Angeles, Calif.
J. S. MALOY, West Penn Power Co., Pittsburgh, Pa.
W. J. MCLAIN, The Dayton Power and Light Co., Dayton, Ohio.
G. S. MEYRICK, Wisconsin Public Service Corp., Green Bay, Wis.
R. E. MORSE, American Gas and Electric Service Corp., New York, N. Y.
L. L. NEWMAN, New Orleans Public Service Inc., New Orleans, La.
F. W. NIMMER, Ohio Edison Co., Akron, Ohio.
E. W. OESTERREICH, Duquesne Light Co., Pittsburgh, Pa.
F. W. PACKER, Pennsylvania Power & Light Co., Allentown, Pa.
W. M. PENNEY, Union Electric Co. of Missouri, St. Louis, Mo.
W. C. PHILLIPS, New England Power Service Co., Boston, Mass.
M. H. POWELL, Public Service Co. of Colorado, Denver, Colo.
M. H. PRATT, Central New York Power Corp., Syracuse, N. Y.
J. A. PULSFORD, Public Service Electric and Gas Co., Newark, N. J.
E. C. RUE, Boston Edison Co., Boston, Mass.
B. C. RUSSELL, Idaho Power Co., Boise, Idaho.
E. V. SAYLES, Consumers Power Co., Jackson, Mich.

T. W. SCHROEDER, Iowa Power and Light Co., Des Moines, Iowa.
F. C. SHAUGHNESSY, Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
A. N. SHEALY, Pennsylvania Water & Power Co., Baltimore, Md.
E. B. SHEW, Philadelphia Electric Co., Philadelphia, Pa.
J. A. SIEGFRIED, Pennsylvania Power & Light Co., Allentown, Pa.
F. W. SMITH, Virginia Electric and Power Co., Richmond, Va.
L. G. SMITH, Consolidated Gas, Electric Light & Power Co., Baltimore, Md.
G. F. SPEER, Wisconsin Electric Power Co., Milwaukee, Wis.
H. E. STITES, Central Illinois Public Service Co., Springfield, Ill.
F. H. STREIT, Columbus and Southern Ohio Electric Co., Columbus, Ohio.
T. D. THOMAS, Texas Power & Light Co., Dallas, Texas.
W. A. UPHAM, The United Illuminating Co., New Haven, Conn.
G. S. VAN ANTWERP, Philadelphia Electric Co., Philadelphia, Pa.
W. L. VEST, JR., Western Massachusetts Electric Co., Springfield, Mass.
J. D. WADDELL, Delaware Power & Light Co., Wilmington, Del.
C. V. WADDINGTON, Kansas Gas and Electric Co., Wichita, Kans.
W. R. WEISE, The Cincinnati Gas & Electric Co., Cincinnati, Ohio.
H. K. WILLIAMS, The Hartford Electric Light Co., Hartford, Conn.
R. R. WISNER, Stone & Webster Engineering Corp., Boston, Mass.
J. H. ZOLLER, Westchester Lighting Co., Mount Vernon, N. Y.
O. J. ZWIEBEL, The Connecticut Light & Power Co., Waterbury, Conn.

GENERAL COMMITTEES

ACCIDENT PREVENTION COMMITTEE

Chairman, W. T. ROGERS, Ebasco Services Inc., New York, N. Y.
Secretary, C. K. POARCH, Edison Electric Institute, New York, N. Y.
H. P. ALLEN, Rockland Light and Power Co., Boston, Mass.
E. E. BECK, Idaho Power Co., Boise, Idaho.
J. T. BRADSHAW, Puget Sound Power & Light Co., Seattle, Wash.
W. F. BROWN, Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
R. T. CARTON, Iowa-Illinois Gas and Electric Co., Rock Island, Ill.
R. H. COLEMAN, Consolidated Gas Electric Light & Power Co., Baltimore, Md.
H. J. CRISICK, The Cleveland Electric Illuminating Co., Cleveland, Ohio.
J. C. CUNNINGHAM, Indianapolis Power & Light Co., Indianapolis, Ind.
J. G. DICKINSON, Wisconsin Electric Power Co., Milwaukee, Wis.
I. R. DOHR, Consumers Power Co., Jackson, Mich.
A. H. DOUD, Rochester Gas and Electric Corp., Rochester, N. Y.
R. P. DOUGLAS, The Detroit Edison Co., Detroit, Mich.
F. T. ELLENBERG, Atlantic City Electric Co., Atlantic City, N. J.
C. A. FISCHBACK, Southern California Edison Co., Ltd., Los Angeles, Calif.
R. M. GODWIN, Philadelphia Electric Co., Philadelphia, Pa.
C. E. HAMMON, Columbus and Southern Ohio Electric Co., Columbus, Ohio.
A. S. HANCOCK, Long Island Lighting Co., Mineola, N. Y.
F. G. HARRIMAN, New England Power Service Co., Boston, Mass.
P. L. G. HASSKARL, Pennsylvania Power & Light Co., Allentown, Pa.
H. E. HATFIELD, Georgia Power Co., Atlanta, Ga.
E. L. IDE, The United Illuminating Co., Bridgeport, Conn.
E. J. KREH, Duquesne Light Co., Pittsburgh, Pa.
H. L. R. KURTH, Boston Edison Co., Boston, Mass.
D. T. LACEY, Central Illinois Public Service Co., Springfield, Ill.
WILLS MACLACHLAN, Maple, Ontario, Canada.
C. D. MURDOCK, Kansas City Power & Light Co., Kansas City, Mo.
R. E. PHENICIE, Wisconsin Public Service Corp., Green Bay, Wis.
G. J. RUOFF, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
C. J. SMITH, Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
W. R. SMITH, Public Service Electric & Gas Co., Newark, N. J.
H. O. SPRINKLE, Monongahela Power Co., Fairmont, W. Va.
D. C. STEWART, Niagara Hudson Power Corp., Buffalo, N. Y.
G. K. URBAN, Pennsylvania Water & Power Co., Holtwood, Pa.
H. F. WEBB, West Penn Power Co., Pittsburgh, Pa.
R. W. WHITE, Pacific Gas and Electric Co., San Francisco, Calif.
S. H. YOUNG, The Hartford Electric Light Co., Hartford, Conn.

INDUSTRIAL RELATIONS COMMITTEE

Chairman, S. F. LEAHY, The Detroit Edison Company, Detroit, Mich.
Secretary, E. S. EVANS, Edison Electric Institute, New York, N. Y.
J. C. ARNELL, Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
D. A. BARTLETT, Western Massachusetts Electric Co., Springfield, Mass.
H. K. BRECKENRIDGE, West Penn Power Co., Pittsburgh, Pa.
C. B. BOULET, Wisconsin Public Service Corp., Green Bay, Wis.
A. M. BOYD, Philadelphia Electric Co., Philadelphia, Pa.
V. C. BRENNAN, Union Electric Co. of Missouri, St. Louis, Mo.
E. J. BRILL, Pennsylvania Power & Light Co., Allentown, Pa.
R. C. BUELL, Ebasco Services Inc., New York, N. Y.
T. A. BUSBY, South Carolina Power Co., Charleston, S. C.
J. W. CAROTHERS, Consolidated Gas Electric Light & Power Co., Baltimore, Md.
A. L. COLLIGAN, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
W. J. COOPER, The United Illuminating Co., New Haven, Conn.
W. N. CUMMINS, Virginia Electric and Power Co., Richmond, Va.
H. L. DONALDSON, Duquesne Light Co., Pittsburgh, Pa.
G. W. FEWKES, Philadelphia Electric Co., Philadelphia, Pa.
M. H. FRANK, Wisconsin Power and Light Co., Madison, Wis.
F. J. GLEESON, Northern States Power Co., Minneapolis, Minn.
J. O. HENKEL, Alabama Power Co., Birmingham, Ala.
E. E. HILL, Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
W. E. HUGHES, Rochester Gas and Electric Corp., Rochester, N. Y.

J. H. JOHNSON, The Hartford Electric Light Co., Hartford, Conn.
F. L. LARKIN, Wisconsin Electric Power Co., Milwaukee, Wis.
G. E. MCKENNA, Ohio Edison Co., Akron, Ohio.
W. S. MEYERS, Atlantic City Electric Co., Atlantic City, N. J.
L. J. NEVRAUMONT, Pacific Gas and Electric Co., San Francisco, Calif.
R. E. NOCK, New England Power Service Co., Boston, Mass.
R. F. NORRIS, Westchester Lighting Co., Mount Vernon, N. Y.
C. Y. OSBURN, Long Island Lighting Co., Mineola, N. Y.
H. R. PEARSON, Dallas Power & Light Co., Dallas, Texas.
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H. V. POTTS, Columbus and Southern Ohio Electric Co., Columbus, Ohio.
F. R. RAUCH, The Cincinnati Gas & Electric Co., Cincinnati, Ohio.
J. A. REID, Southwestern Gas and Electric Co., Shreveport, La.
H. S. RICHMOND, Consumers Power Co., Jackson, Mich.
W. H. SENYARD, Louisiana Power & Light Co., New Orleans, La.
H. M. SHARP, Buffalo Niagara Electric Corp., Buffalo, N. Y.
E. J. THIMME, Public Service Electric and Gas Co., Newark, N. J.
R. H. THOMPSON, Central Illinois Public Service Co., Mattoon, Ill.
F. E. VERDIN, The Cleveland Electric Illuminating Co., Cleveland, Ohio.
W. R. WOLFE, Oklahoma Gas & Electric Co., Oklahoma City, Okla.

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J. B. BOSTWICK, Public Service Electric and Gas Co., Newark, N. J.
R. D. CONSTABLE, Niagara Hudson Power Corp., Syracuse, N. Y.
H. S. DOWNING, Consolidated Gas, Electric Light & Power Co., Baltimore, Md.
W. H. EICHHORN, JR., Pennsylvania Water & Power Co., Baltimore, Md.
S. L. HALL, The Cleveland Electric Illuminating Co., Cleveland, Ohio.
F. J. HITCHEN, Atlantic City Electric Co., Atlantic City, N. J.
F. J. HOLUB, Duquesne Light Co., Pittsburgh, Pa.
J. W. MARRIN, The Commonwealth & Southern Corp., New York, N. Y.
H. M. PARKER, Central Illinois Public Service Co., Springfield, Ill.
W. O. RANDLETT, Virginia Electric & Power Co., Richmond, Va.
A. W. REID, American Gas and Electric Service Corp., New York, N. Y.
R. M. SALVANT, Louisiana Power & Light Co., New Orleans, La.
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Vice Chairman (Stores), H. E. HODGSON, Wisconsin Power and Light Co., Madison, Wis.
Vice Chairman (Purchasing), C. F. OGDEN, The Detroit Edison Co., Detroit, Mich.
Secretary-Treasurer, C. H. ZURNIEDEN, Philadelphia Electric Co., Philadelphia, Pa.
W. C. ALLEN, Utah Power & Light Co., Salt Lake City, Utah.
HOWARD ARNETT, Portland General Electric Co., Portland, Ore.
O. H. AYDELOTTE, Public Service Co. of Colorado, Denver, Colo.
G. E. BALCH, Duquesne Light Co., Pittsburgh, Pa.
W. S. BARKER, The Hartford Electric Light Co., Hartford, Conn.
H. M. BARRETT, Delaware Power & Light Co., Wilmington, Del.
J. P. BLUMER, Gulf Power Co., Pensacola, Fla.
J. J. BRENNAN, Northern States Power Co., Minneapolis, Minn.
H. L. BREWER, Consumers Power Co., Jackson, Mich.
E. S. BROCK, Public Service Electric and Gas Co., Newark, N. J.
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DALE CORBIN, Kansas Gas and Electric Co., Wichita, Kans.
E. H. CREWS, Metropolitan Edison Co., Reading, Pa.
J. C. DALTON, Puget Sound Power & Light Co., Seattle, Wash.
R. J. DANIELS, New England Power Service Co., Boston, Mass.
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E. D. EMIGH, JR., The United Illuminating Co., New Haven, Conn.
J. A. FARMER, New Orleans Public Service, Inc., New Orleans, La.
H. J. FITZSIMMONS, Kansas City Power & Light Co., Kansas City, Mo.
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O. HENENBERG, Texas Power & Light Co., Dallas, Texas.
J. A. HERLIHY, Boston Edison Co., Boston, Mass.
J. D. HOGG, The Cleveland Electric Illuminating Co., Cleveland, Ohio.
W. M. HOLLS, Consolidated Gas Electric Light and Power Co., Baltimore, Md.
J. B. HOMSHER, Pennsylvania Water & Power Co., Baltimore, Md.
R. S. KING, Union Electric Co. of Missouri, St. Louis, Mo.
J. KROHN, Consolidated Edison Co. of New York, Inc., New York, N. Y.
F. F. KUYK, Virginia Electric and Power Co., Richmond, Va.
R. L. LEACH, Georgia Power Co., Atlanta, Ga.
H. C. LOEHR, Central Power and Light Co., Corpus Christi, Texas.
G. E. MARLEY, Indianapolis Power & Light Co., Indianapolis, Ind.
A. A. MEISENHEIMER, Wisconsin Electric Power Co., Milwaukee, Wis.
W. R. METZGER, Duquesne Light Co., Pittsburgh, Pa.
J. R. MILLIKAN, Dallas Power & Light Co., Dallas, Texas.
C. J. MONICA, Consolidated Edison Company of N. Y., Inc., New York, N. Y.
FRANK NAGELE, American Gas and Electric Service Corp., New York, N. Y.
T. S. NICKELSON, The Detroit Edison Co., Detroit, Mich.
A. J. PATRICK, The Dayton Power and Light Co., Dayton, Ohio.
L. D. PATTERSON, Monongahela Power Co., Fairmont, W. Va.
W. W. PIERCE, Power & Light Co., Topeka, Kans.
FRED POLONUS, Central Illinois Light Co., Peoria, Ill.
W. A. PRICE, Central Maine Power Co., Augusta, Maine.
C. I. RICHARDS, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
JOHN RIEVES, Southwestern Gas and Electric Co., Shreveport, La.
MISS C. RUBLE, Arkansas-Missouri Power Co., Blytheville, Ark.
L. F. RYAN, The Ohio Power Co., Canton, Ohio.
F. R. SCHAFFER, Pennsylvania Power & Light Co., Allentown, Pa.
A. J. SCOTT, California Electric Power Co., Riverside, Calif.

E. N. Scott, Long Island Lighting Co., Mineola, N. Y.
R. W. Seipel, Texas Electric Service Co., Fort Worth, Texas.
D. A. Stephens, Southern Indiana Gas & Electric Co., Evansville, Ind.
N. C. Stirewalt, Central Illinois Public Service Co., Springfield, Ill.
W. E. Taylor, Western Light & Telephone Co., Inc., Kansas City, Kans.
J. B. Thomas, Alabama Power Co., Birmingham, Ala.
L. A. Trinkino, New York State Electric & Gas Corp., Binghamton, N. Y.
C. Van Remortel, Lake Superior Distric Power Co., Ashland, Wis.
B. T. Walshe, Atlantic City Electric Co., Atlantic City, N. J.
R. D. Williams, The Washington Water Power Co., Spokane, Wash.
H. Wilson, Carolina Power & Light Co., Raleigh, N. C.
D. E. Winslow, West Penn Power Co., Pittsburgh, Pa.
L. T. Wolf, Ebasco Services Inc., New York, N. Y.
C. G. Wright, The Potomac Edison Co., Hagerstown, Md.
Carl Wuerpel, Community Public Service Co., Fort Worth, Texas.
A. B. Zurick, West Penn Power Co., Pittsburgh, Pa.

Guest

J. J. Burton, British Columbia Elec. Ry. Co., Ltd., Vancouver, B. C., Canada.

RATE RESEARCH COMMITTEE

Chairman, S. W. Andrews, American Gas and Electric Service Corp., New York, N. Y.
Vice Chairman, H. I. Miller, Wisconsin Public Service Corp., Oshkosh, Wis.
F. W. Brooks, The Cleveland Electric Illuminating Co., Cleveland, Ohio.
R. E. Caywood, West Penn Power Co., Pittsburgh, Pa.
I. L. Craig, Philadelphia Electric Co., Philadelphia, Pa.
R. D. Cutler, The Hartford Electric Light Co., Hartford, Conn.
B. P. Dahlstrom, Public Service Electric and Gas Co., Newark, N. J.
C. G. Eichelberger, The Cincinnati Gas & Electric Co., Cincinnati, Ohio.
C. L. Follmer, Consolidated Gas Electric Light and Power Co., Baltimore, Md.
L. W. Frank, Western Massachusetts Electric Co., Springfield, Mass.
R. C. Grimstad, Duquesne Light Co., Pittsburgh, Pa.
K. W. Hasbrouck, New York State Electric & Gas Corp., Ithaca, N. Y.
Russell Hastings, Boston Edison Co., Boston, Mass.
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C. R. Landrigan, The Detroit Edison Co., Detroit, Mich.
L. R. Lefferson, Ebasco Services Inc., New York, N. Y.
W. E. Liepe, New Jersey Power & Light Co., Dover, N. J.
A. V. S. Lindsley, The Connecticut Light & Power Co., Waterbury, Conn.
C. E. Neil, The North American Co., New York, N. Y.
L. V. Nelson, Union Electric Co. of Missouri, St. Louis, Mo.
W. E. Rogers, Indianapolis Power & Light Co., Indianapolis, Ind.
Arthur Schultheis, Central New York Power Corp., Syracuse, N. Y.
E. N. Strait, Pioneer Service & Engineering Co., Chicago, Ill.
F. M. Terry, Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
Edwin, Vennard, Middle West Service Co., Chicago, Ill.
H. C. Webb, Puget Sound Power & Light Co., Seattle, Wash.
C. A. Williams, The United Illuminating Co., New Haven, Conn.
E. T. Williamson, Iowa-Illinois Gas and Electric Co., Rock Island, Ill.

STATISTICAL COMMITTEE

Chairman, O. E. Smith, Consolidated Gas Electric Light and Power Co., Baltimore, Md.
W. S. Brush, Consolidated Edison Co. of N. Y., Inc., New York, N. Y.
R. F. Crim, West Penn Power Co., Pittsburgh, Pa.
R. J. Dorrian, Middle West Service Co., Chicago, Ill.
M. D. Field, The California Oregon Power Co., Medford, Ore.
W. W. Godard, The Cleveland Electric Illuminating Co., Cleveland, Ohio.
Alfred Gruhl, Wisconsin Electric Power Co., Milwaukee, Wis.
C. D. Hamlin, Buffalo Niagara Electric Corp., Buffalo, N. Y.
W. C. Huebner, Ebasco Services Inc., New York, N. Y.
F. A. Keane, Public Service Electric and Gas Co., Newark, N. J.
J. D. Lemon, Indianapolis Power & Light Co., Indianapolis, Ind.
Winsor Martin, Pioneer Service & Engineering Co., Chicago, Ill.
E. H. Scott, The Detroit Edison Co., Detroit, Mich.
A. E. Softy, The Commonwealth & Southern Corp., New York, N. Y.
William Storz, Philadelphia Electric Co., Philadelphia, Pa.
D. M. Tonge, American Gas and Electric Service Corp., New York, N. Y.
H. A. Weitzman, Rochester Gas and Electric Corp., Rochester, N. Y.
O. H. White, Central Illinois Public Service Co., Springfield, Ill.
W. A. Worthington, Pacific Gas and Electric Co., San Francisco, Calif.

TRANSPORTATION COMMITEE

Chairman, Linn Edsall, Philadelphia Electric Co., Philadelphia, Pa.
L. C. Alexander, The Cleveland Electric Illuminating Co., Cleveland, Ohio.
R. O. Babcock, Consolidated Edison Company of N. Y., Inc., New York, N. Y.
A. W. Baumgarten, Ebasco Services Inc., New York, N. Y.
T. A. Bradley, Kansas City Power & Light Co., Kansas City, Mo.
H. J. Collins, Boston Edison Co., Boston, Mass.
J. L. Coyne, Rochester Gas and Electric Corp., Rochester, N. Y.
R. M. Cregar, Public Service Electric and Gas Co., Newark, N. J.
R. P. Faulkner, Pennsylvania Power & Light Co., Allentown, Pa.
E. J. Graham, Public Service Co. of Colorado, Denver, Colo.
R. M. Middleton, San Diego Gas & Electric Co., San Diego, Calif.
H. L. Parlette, Long Island Lighting Co., Mineola, N. Y.
H. A. Peterson, American Gas and Electric Service Corp., New York, N. Y.
J. Y. Ray, Virginia Electric and Power Co., Richmond, Va.
A. C. Verock, The Commonwealth & Southern Corp., Jackson, Mich.
Randolph Whitfield, Georgia Power Co., Atlanta, Ga.
D. K. Wilson, New York Power and Light Corp., Albany, N. Y.

Recent EEI Commercial Division Activities

AT THE present time, the commercial committees are being reorganized for the current year's activity. Committee membership rosters have been revised and new chairmen appointed. Meetings of section and committee chairmen will be held to schedule projects for the year ahead.

Electric Kitchen Program

The All-Electric Kitchen Program, prepared by the EEI Electric Kitchen and Laundry Committee, is now being used by 127 electric companies, leagues and others. Over 450,000 copies of the "Kitchenizer's Digest," the customer booklet spearheading the program, have been purchased, and nearly 100 prints of "The Constant Bride," the program's 16 mm color motion picture, are now in use.

Appliance manufacturers too have been quick to recognize the value of this activity. Companies who have to date announced their intention to use the program slogan, "Of Course—It's Electric!" in their own advertising include Westinghouse, General Electric, Kelvinator, Hotpoint, Frigidaire, Crosley, Coolerator, Swartzbaugh, Shiting, Pemco and Deepfreeze. Other manufacturers are expected to take advantage of this effective slogan.

Planned Lighting Program

"The Facts of Light," a brochure packed with information on successful Planned Lighting promotions by electric companies, is now being prepared and will be distributed to the industry early in September. The booklet will evaluate lighting revenue possibilities, and will present the entire array of P/L promotional-educational aids available for use in 1949-50, including a new series of direct mail folders aimed at the gasoline service station market.

Prize Awards

The George A. Hughes Award for 1949 has been expanded to include prizes offered for outstanding promotion of electric dishwashers by electric companies. A total of $2,400 in cash, with trophies and plaques, will be presented at the 1950 EEI Sales Conference for the best promotion of electric kitchens, domestic electric ranges, water heaters, dishwashers and commercial electric cooking during 1949.

Industrial Power and Heating Section

Two new revisions of sections for the "Power Sales Manual" are scheduled for early release. Their titles are *"Induction and Dielectric Heating,"* and *"Industrial Refrigeration and Air Conditioning."*

An Industrial Heating Conference, sponsored by the EEI Industrial Power and Heating Section in connection with Westinghouse Electric Corp., will be held at Summit House, Uniontown, Pa., on March 13-17, 1950. About 200 power sales representatives are expected to attend this sales training meeting, which will feature specific instruction on modern electric heating equipment and tours of outstanding heating installations in Pittsburgh.

A new Sales Promotion Subcommittee of the General Power and Heating Committee is being organized. It will be responsible for investigating and making recommendations on ways and means for organized selling of industrial power.

Commercial Electric Cooking

"Invest One Cent In Electricity," better known to commercial electric cooking men as the "Penny" folder, is now available from EEI in a revised and expanded edition. Increased in size to 16 pages, printed on coated stock and using a metallic ink, the folder emphasizes the economy of commercial electric cooking equipment, with facts and figures presented in brief, hard-hitting style.

Frank Kitzmiller, Jr., formerly with Duquesne Light Co., has joined the EEI Commercial Department, and will devote his time to commercial electric cooking and the All-Electric Kitchen Program.

A new commercial electric cooking sales aid will soon be available from the EEI Commercial Cooking Committee. Data sheets, with pertinent facts of representative cooking installations, will be issued to electric companies for distribution to salesmen, on an annual subscription basis. Each sheet will include a testimonial from the restaurant operator, with photographs of the electric equipment and operating information. Information for these sheets is to be obtained from company personnel who submit case studies for consideration by the committee.

A Commercial Electric Cooking Conference, sponsored by the EEI Commercial Cooking Committee, at Atlantic City on May 25, 1949, attracted over 100 representatives of electric companies, equipment manufacturers and restaurant operators.

Market Development Committee Reports

Two reports of the Market Development and Electrical Applications Committee, Commercial Sales Section, have recently been distributed to EEI members. One of these reports presents a study of the load and profit potential of the typical drug store, and includes case histories of the planned modernization of two drug stores, one small, the other of medium size.

The second report consists of an outline for a suggested "Commercial Customer Information Booklet," which, the committee believes, could profitably be distributed to new commercial customers to inform them of the varied services available from the electric company. The report outlines the reasons for such a booklet and presents a sample text prepared by the committee.

Better Light-Better Sight Bureau

With the Bureau's light-sight educational program for grade school classes proving itself an outstanding success, plans are now being made for a new instructional program, primarily for science classes at the junior high school grade level. Further details about this project will be announced later in the year.

A Kodachrome sound-slide film on classroom lighting, suitable for showings to school boards and administrators, PTA's, civic and other groups, will be made available through the Bureau within the near future.

Home Service Meetings

Most recent in the series of regional meetings for home service personnel being sponsored by members of the Home Service Committee were those held during the spring by Miss Anne Sutter, Duquesne Light Co., in Pittsburgh, and by Miss Mary Belle Burnett, The Cincinnati Gas & Electric Co., Cincinnati. Home Economists of electric companies in neighboring states are invited to attend and to take part in the programs,

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PERSONALS

HARLLEE BRANCH, JR., member of the Atlanta law firm of MacDougald, Troutman, Sams & Branch, has been elected vice president and general manager of Georgia Power Co. to fill a position vacant since 1945. He also was named to the board of directors, succeeding GRANVILLE H. BOURNE, vice president of the Southern Co.

Mr. Branch has handled legal matters for the utility since 1931, when he joined the law firm, headed by Dan MacDougald, chairman of Georgia Power. Born in Atlanta June 21, 1906, Mr. Branch is a graduate of Davidson College and Emory University. He is a former president of the Atlanta Bar Association.

J. ROBERT WELSH, superintendent of operations of the Southwestern Gas & Electric Co., Shreveport, La., has been elected a vice president of the company.

Mr. Welsh has been associated with Southwestern since 1940, when he became superintendent of power. Five years ago he was appointed superintendent of operations and was elected to the board of directors in 1948.

Previously Mr. Welsh had served as chief engineer of the L. E. Myers Co., with headquarters in Chicago.

LANE D. WEBBER, vice president of Southern California Edison Co., has been made head of the company's public relations department. W. C. MCWHINNEY, assistant vice president, will be associated with him.

FRED M. KIMBALL has been appointed General Sales Manager of Kansas Gas and Electric Co. This appointment will mark the beginning of an expanding sales program by the company. "Particular emphasis will be given to the development of new industry throughout the area served by KG&E and encouraging other industrial plants to move in," according to Murray Gill, president of the company.

Mr. Kimball came to Wichita from Portland, Ore., where he was Sales Promotion Manager of the Portland Gas & Coke Co.

During the war, Mr. Kimball was in government service and rose from analyst to chief of the Allocation Section, Manufactured Gas Division.

Mr. Kimball was born in Hartington, Nebraska, and started to work for the Kansas Electric Power Co. in Leavenworth, Kansas, as an appliance salesman in 1929. He successively became division new business manager, division commercial manager and assistant general commercial manager. In 1939, he was transferred to the Missouri Public Service Corp. at Warrensburg, Mo., as general commercial manager.

EDGAR J. KARSTEN has been appointed chief engineer of the Kansas Gas and Electric Co.

Mr. Karsten will be in charge of the engineering department which handles planning and design of the electrical construction and reconstruction work for the system-wide operations of the company.

Mr. Karsten came from Davenport, Iowa, where he has been supervising electrical engineer for the United Light properties. Prior to that he had considerable experience in engineering work, both in connection with construction and operation of electrical properties. He received his engineering degree from the State University of Iowa and has done post-graduate work with the Lafayette Institute of Los Angeles, Lathrup Polytechnic Institute of Kansas City, Mo., and the University of Illinois.

He is a member of the Electric Equipment Committee of Edison Electric Institute, and of the A.I.E.E.

RALPH E. GALE, general sales manager of Idaho Power Co. since 1936, has been named assistant to the president of the company.

Several personnel changes have resulted from consolidation of Ohio Power Co.'s Canton and Service (Coshocton) Divisions into a new Central Division with headquarters in Canton.

R. C. KNAPP, Canton Division manager, has been appointed manager of the Central Division of the Ohio Power Co. with T. E. WITH, service division manager. WILLIAM J. STEWART was named superintendent of the central division. He is succeeded as Waynesburg district manager by FRED M. ZIMMER, Canton division distribution superintendent.

W. J. ROSE, with American Gas & Electric Service Corp. of New York since 1938, has been elected secretary of AG&E. He entered the public utility industry in 1930, in the financial and treasury departments of Central Public Service Corp., Chicago. Later he worked for Stone & Webster Service Corp. and Stone & Webster & Blodget, Inc.

R. L. PHILLIPS has been made general superintendent of power in charge of Louisiana Power & Light Co.'s Sterlington and new Ninemile Point generating plants. JOHN R. HORTON, station chief at Sterlington, will be plant superintendent at Ninemile, and CARL D. BROOKS will succeed Mr. Horton at Sterlington.

RAYMOND S. TALTON, Carolina Power & Light Co., plant engineer, has been appointed to the newly created position of production engineer. He will be responsible for general supervision of technical and engineering aspects of the utility's hydro and steam electric generating stations. A graduate of North Carolina State College, Talton joined the company in 1939 as assistant engineer in the operating department.

WALTER J. LYMAN has been appointed manager, planning and development department, Duquesne Light Co., Pittsburgh. E. A. HESTER has been made consultant to the manager of the planning and development department. Entering the employ of Duquesne Light in 1924 as an apprentice engineer, Mr. Lyman has since served the company as a junior engineer and assistant field engineer, engineering department, and as section engineer and engineering assistant to manager, planning and development department. Mr. Hester became identified with Duquesne Light in 1926 as transmission planning engineer and subsequently became planning engineer and superintendent of planning and development department. From 1941 to 1944 he served with the War Production Board.

ROBERT L. KING, a World War II navy officer and present personnel director of the Inland Container Corporation at Indianapolis, has been named

director of industrial relations for Kansas City Power & Light Co. John W. B. Foringer, has resigned.

Mr. King will supervise the company's employment, training, safety and medical departments, as well as the Mutual Benefit Association and general employee activities. Employee relations will also come into the scope of his activities.

The new director is a native of Ohio, received his A.B. degree from Western Reserve University and attended the Western Reserve school of law. In 1936 he was made director of industrial relations for the Fisher Body division of General Motors Corp. at Cleveland, Ohio, and in 1943 he enlisted in the U. S. Navy. He served as a Lieutenant (j.g.) in charge of industrial relations for the 14th naval district and as a full Lieutenant at the Oahu, Hawaii, naval air station.

Upon his discharge from service in 1946, Mr. King returned to the Fisher Body division of General Motors at Flint, Mich., and shortly thereafter accepted his present position with the Inland Corp.

W. FRED WETMORE has been appointed chief electrical engineer in charge of the electrical engineering division of the engineering department of The Detroit Edison Co.

T. O. MCQUISTON has been appointed Manager of Residential Sales, Duquesne Light Company, Pittsburgh, Pa., to succeed George A. Gardner, who died recently.

Born in Edgewood, Pa., Mr. McQuiston attended the local public schools and the University of Pittsburgh, from which he was graduated in 1925 with a bachelor of science degree. In 1929 he was graduated from Duquesne University with a bachelor of laws degree.

Entering the employ of the Company as a contract clerk, Mr. McQuiston has served successively as lighting representative, sales research representative, sales promotion director, and director of residential sales.

He is a member of the Illuminating Engineers Society, Electric League of Western Pennsylvania (Secretary, Board of Directors), Pennsylvania Electric Association (Chairman, Business Development Section), and Edison Electric Institute (Chairman of Electric Kitchen and Laundry Committee).

R. C. GRIMSTAD has been appointed Manager of the Rate Department, Philadelphia Company and Subsidiary Companies (including Duquesne Light and Equitable Gas Companies) Pittsburgh, Pa., succeeding Newell E. French, who recently died.

Mr. Grimstad attended the Wisconsin public schools and the University of Wisconsin, graduating from the latter in 1921, with a bachelor of science degree in electrical engineering.

Prior to coming to Pittsburgh, he served as Assistant to Manager, Stoughton (Wisconsin) Municipal Electric System; and as an electrical design engineer for Sargent and Lundy Consulting Engineers, Chicago.

Mr. Grimstad entered the employ of Duquesne Light Co. in 1926, as a sponsor engineer, Engineering Department, and has since served as section engineer and supervisor, engineering department; industrial sales representative, industrial sales department; and rate analyst and director of rate research, rate department.

He is a member of the Engineers' Society of Western Pennsylvania, and is a registered professional engineer.

R. D. HART, who recently returned from Korea, has resumed active association with the Central Illinois Light Co. in the Peoria electric distribution department after an absence of almost a year. Mr. Hart was one of 12 electrical engineers loaned by the United States to the Korean government for the purpose of building up electrical systems and power plants.

PHILIP H. HARDIE and CLARENCE P. WILSON have become associated with Ebasco Services Inc. as principal mechanical engineers. Mr. Hardie has had wide experience in power plant design and engineering. He was associated for 15 years with Consolidated Edison Co. of New York, and prior to that was with the Brooklyn Edison Co. and Westinghouse Electric Corp. Mr. Wilson is widely experienced in the industrial field. In his latest assignment before joining Ebasco, he was in complete charge of the design of power plants in Alaska. Prior to that connection he was engaged in the design of power plants for textile and paper mills, oil refineries, and chemical plants.

ROBERT H. NYE has been promoted to the post of assistant to the general sales manager, Western Masachusetts Electric Co. His headquarters will be at Springfield. He joined the sales department in 1937 at Greenfield, working in the commercial and industrial lighting division. Following three years' war service in the U. S. Navy as a lieutenant, Mr. Nye has been sales manager of the northern division, Greenfield.

WALTER F. CHAPMAN, who has been associated with the San Diego Gas & Electric Co. in various capacities since 1922, has been appointed commercial manager of the company. Prior to his promotion, Mr. Chapman was serving as superintendent of the customer extensions department. He succeeds H. G. DILLIN who was chosen vice president in charge of sales.

WALTER L. JONES, director of economic development, Union Electric Co., St. Louis, Mo., has been appointed administrator of the company's new management development program. In this capacity, Mr. Jones will direct a program designed to coordinate policies and problems of all levels of management personnel and to provide a two-way communication between these levels as a means of formulating long-range policies. Mr. Jones has been with Union Electric and affiliated companies for 29 years.

C. W. KENNEY, construction engineer for the West Penn Power Co., Pittsburgh, has retired after more than 43 years of service. He has been responsible for the many civil engineering projects in the company's system.

GORDON B. HOFFMAN has been promoted to the position of company civil engineer, in which he will be responsible for the civil engineering design of all construction projects for the company's power and operating departments.

H. D. ANDERSON, vice president and secretary of the American Gas & Electric Co., New York, and a vice president of most of its subsidiary companies, asked to be retired from active duty after more than 40 years' service. His services will be retained until early 1952, his normal retirement date, in an advisory and consulting capacity. For the present he will continue as a member of the board of directors of American Gas & Electric.

Recent EEI Commercial Division Activities

(*Continued from page* 357)

which feature new home service ideas, demonstration techniques and discussion of home service problems. A booklet outlining suggested procedures for holding such meetings is available from EEI.

"Patterns for Parties"

"Patterns For Parties," a 32-page illustrated booklet, with more than 100 ideas for unusual parties, is being prepared under supervision of the Home Service Committee. Stressing the time and work-saving advantages of electric appliances in impromptu entertaining, the booklet is intended for distribution to teen-agers and homemakers. It will be available from EEI early this fall.

Farm Electification

A booklet entitled "Why A Rural Youth Program?" has recently been published by the EEI Farm Section. It describes the major farm youth organizations and presents reasons why electric companies should be interested in cooperating with these groups in projects dealing with electrical applications on farms.

Several new sections for the "Farm Electrification Manual" are now being prepared and will include sections on dairy stable ventilation, irrigation and poultry house ventilation.

A survey of farm customers, being made for the Farm Section by several electric companies, promises to disclose important market data, according to the limited information so far received from the field. Rural customers' buying preferences in electrical appliances form an important part of the survey, which will be made available to member companies upon completion.

Dealer Coordination Manual

Two new sections for the manual, "Ideas For Dealer Cooperation," have just been distributed, and cover ideas used by electric companies to secure dealer cooperation in campaigns on "Food Freezers" and "Clothes Dryers." The manual, which describes successful dealer cooperation plans employed by electric companies in promotion of specific appliances, is prepared by the Dealer Coordination Committee and is presented to EEI members on a complimentary basis.

CONVENTIONS AND MEETINGS

OCTOBER

3-5 Meter and Service Committee, EEI, Leland Hotel, Springfield, Ill.
3-5 Electrical Equipment Committee, EEI, Van Curler Hotel, Schenectady, N. Y.
3-5 International Association of Electrical Inspectors, North West Section, Butte, Mont.
4-6 Canadian Electrical Manufacturers Association, General Brock Hotel, Niagara Falls, Ont., Can.
6-7 Pennsylvania Electric Association, Prime Movers Committee, Hotel Edison, Sunbury, Pa.
10-11 Iowa Utilities Association, Second Annual Management Conference, Fort Des Moines Hotel, Des Moines, Iowa.
10-12 International Association of Electrical Inspectors, South West Section, San Diego, Calif.
10-14 American Society for Testing Materials, San Francisco, Calif.
11-14 American Standards Association, Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.
17-19 International Association of Electrical Inspectors, Southern Section, Houston, Tex.
17-20 American Gas Association, Chicago, Ill.
17-21 American Institute of Electrical Engineers, Midwest General Meeting, Netherland Plaza Hotel, Cincinnati, Ohio.
20-21 Pennsylvania Electric Association, Transmission and Distribution Committee, Fort Ligonier Hotel, Ligonier, Pa.
24-26 American Trade Association Executives, Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.
24-28 National Safety Council Congress, Chicago, Ill.
25-27 Pacific Coast Electrical Association, Inc., Fall Conference, Hotel Californian, Fresno, Calif.
26-28 Industrial Relations Committee, EEI, Round Table Conference on Personnel Administration, Edgewater Beach Hotel, Chicago, Ill.
31-Nov. 1 Transmission and Distribution Committee, EEI, Lord Baltimore Hotel, Baltimore, Md.

NOVEMBER

2-4 American Society of Civil Engineers, Washington, D. C.
7-10 National Electrical Contractors Association, Rice Hotel, Houston, Texas.
14-18 National Electrical Manufacturers Association, Chalfonte-Haddon Hall, Atlantic City, N. J.
17-18 Pacific Coast Electrical Association, Inc., Annual Fall Conference, Fresno, Calif.
28-29 American Society of Mechanical Engineers, Annual Meeting, New York, N. Y.

1950

JANUARY

30-Feb. 3 American Institute of Electrical Engineers, Winter General Meeting, New York, N. Y.

FEBRUARY

20-21 Transmission and Distribution Committee, EEI, Statler Hotel, Detroit, Mich.

MARCH

13-16 National Electrical Manufacturers Association, Edgewater Beach Hotel, Chicago, Ill.

APRIL

10-14 American Society of Mechanical Engineers, Spring Meeting, Washington, D. C.
26-28 American Institute of Electrical Engineers, North East District Meeting, Providence, R. I.

MAY

1-4 38th Annual Meeting, Chamber of Commerce of the USA, Washington, D. C.
11-12 American Institute of Electrical Engineers, Great Lakes District Meeting, Jackson, Mich.
15-18 54th Annual Meeting, National Fire Protection Association, Haddon Hall, Atlantic City, N. J.
31-June 2 Pacific Coast Electrical Association, Inc., Reno, Nevada.

JUNE

6-8 Edison Electric Institute, Annual Meeting, Atlantic City, N. J.
12-16 National Electrical Wholesalers Association, Atlantic City, N. J.
12-16 American Institute of Electrical Engineers, Summer Meeting, Pasadena, Calif.
19-23 American Society of Mechanical Engineers, Semi-Annual Meeting, St. Louis, Mo.
26-30 American Society for Testing Materials, Atlantic City, N. J.

Additional information on the above mentioned programs, reports and projects is available from the Commercial Director, EEI.

Home Economics Career Booklet

"Make Home Economics Your Career," recently published by EEI, is an 8-page, two-color booklet designed for distribution to high school students a intended to encourage them to stu home economics in college. The bookl describes the careers open to train home economists, stressing those in t electric industry. It was prepared by subcommittee of the Sales Personnel a Training Committee.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

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